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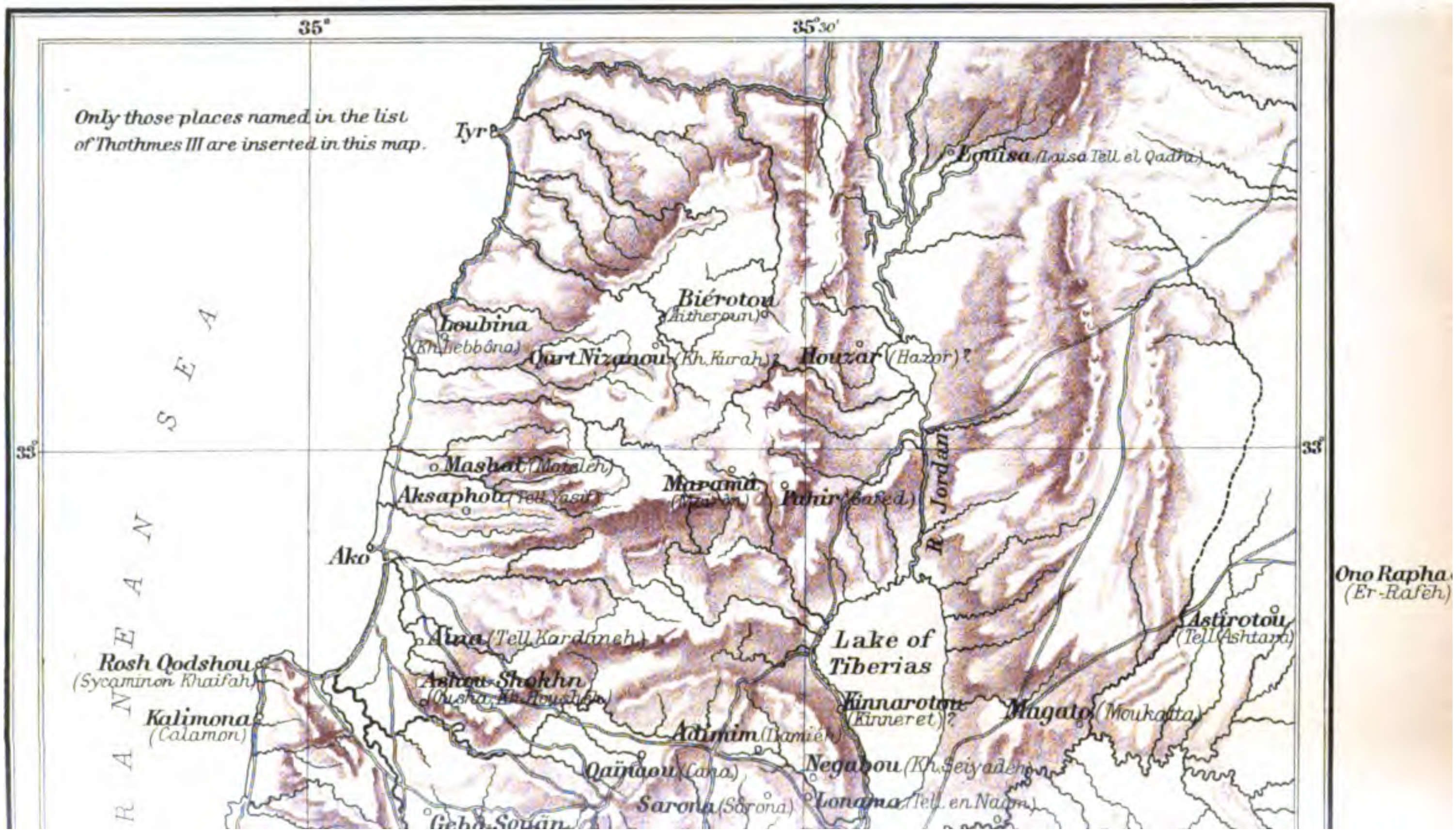

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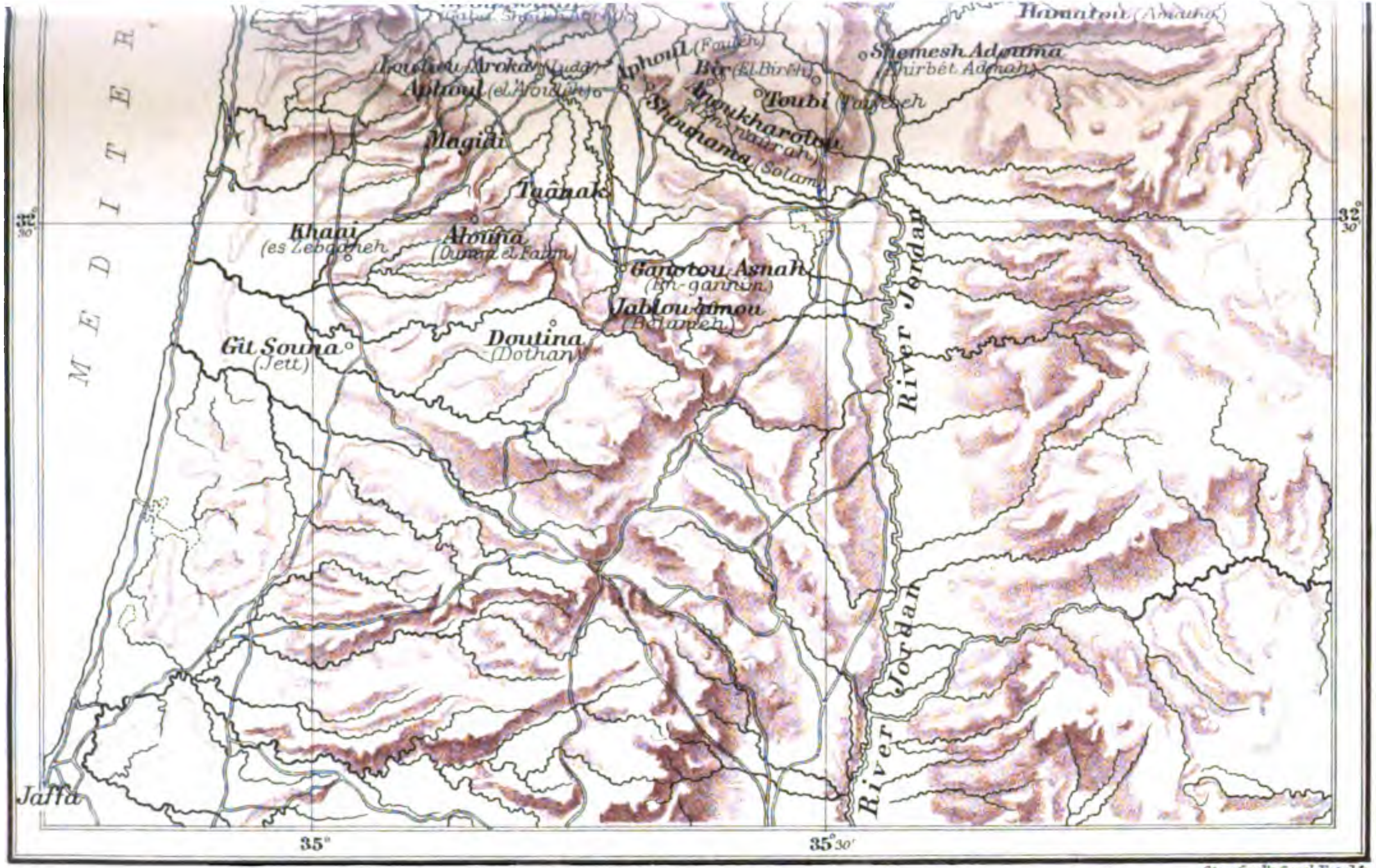

Stanford's Geog¹ Estabᵗ

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JOURNAL OF
THE TRANSACTIONS
OF
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OR
Philosophical Society of Great Britain.

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OBJECTS AND CONTENTS OF ALL THE VOLUMES OF THE JOURNAL.

⁂ The Institute's object being to investigate, it must not be held to endorse the various views expressed at its Meetings.

PREFACE.

THE Twentieth Volume of *the Journal of the Transactions* of the VICTORIA INSTITUTE is now issued. It contains papers by the following authors: — Professor LIONEL S. BEALE, F.R.S., who claims "that the evidence is conclusive that all structure is a consequence, and not a cause, of prior changes in the structureless, and that universally in the living world, 'structure' is preceded by structurelessness." Mr. W. ST. CHAD BOSCAWEN, F.R.Hist.Soc., "On the Historical Evidences of the Migration of Abram," this paper is supplemented by valuable remarks from Professor A. H. SAYCE, F.R.S., and Mr. E. A. W. BUDGE, M.A., of the British Museum. There are two papers on "Agnosticism," one by the Rev. H. G. CLARKE, on its "Fundamental Assumptions"; the other by Mr. J. HASSELL, on its "Unreasonableness." Professor R. L. DABNEY, D.D., LL.D., of Texas University, a useful paper on "Final Cause." Mr. E. CHARLESWORTH, F.G.S., contributes some "Remarks on the Structure of the Gorilla," and the Editor has appended some notes on the "Antiquity of Man," including a brief, but most important and timely review of the Chronology of Animal Life on the Earth, by Sir J. W. DAWSON, K.C.M.G., F.R.S. Professor DUNS, D.D., F.R.S.E., a closely reasoned paper on the "Theory of Natural Selection, and the Theory of Design;" to which the Right Hon. Lord GRIMTHORPE (lately Sir E. BECKETT, Bart.) has added some remarks. The late Mr. W. P. JAMES, F.L.S., an essay on the question "Is the Account of the Creation in Genesis one of a Parallel Series." Professor MASPERO gives the results of his investigations extending over many years, in a paper "On the Geographical Names of the List of Thothmes III., which may be referred to Galilee," which has been most ably translated by that careful student of Egyptology, the Rev. H. G. TOMKINS; it is followed by remarks from Captain CLAUDE REIGNIER CONDER, R.E.; Sir CHARLES WILSON, R.E., K.C.B., F.R.S.; the Rev. Dr. WRIGHT and others. Professor G. E. POST, M.D., "On the Meteorology of Syria and Palestine," a paper useful to the student of Biblical History, to which Sir JOSEPH FAYRER, K.C.S.I., F.R.S., has added some remarks. The Rev. J. LESLIE PORTER, D.D., D.C.L., a paper on "Egypt: Physical, Historical, Literary and Social." The Rev. T. POWELL, F.L.S., one on "A Samoan tradition of Creation and the Deluge," an essay of some interest, as during a forty years' residence in the Samoan Islands the author has been able to commit to writing the whole of those oral traditions once current amongst the natives, but now almost lost. The Rev. H. C. M. WATSON, of New Zealand, a paper on "Miracles." This list would be incomplete did we not call attention to the valuable but brief Address by Professor G. G. STOKES, P.R.S., on the progress of Science, contained in the early pages of the volume.

To these, and to others who have added to the value of the present volume, the best thanks of the Members and Associates are due.

During the past year the QUEEN has again been graciously pleased to signify that Her Majesty would be "happy to accept the further volumes of the *Transactions* of the Victoria Institute."

The Presidency, vacant through the death of the late Earl of Shaftesbury, K.G., has been accepted by Professor G. G. STOKES, M.A., D.C.L., President of the Royal Society. Under his leadership the Institute cannot fail to still further combine men of Science in carrying out its objects, and thus to add to the importance and the solidity of the work done.

FRANCIS W. H. PETRIE, *Capt.*,
Hon. Sec. and Editor.

December 31, 1886.

JOURNAL OF THE TRANSACTIONS

OF THE

VICTORIA INSTITUTE,

OR

PHILOSOPHICAL SOCIETY OF GREAT BRITAIN.

ANNUAL GENERAL MEETING,

HELD AT THE HOUSE OF THE SOCIETY OF ARTS,

THURSDAY, JUNE 18, 1885.

SIR HENRY BARKLY, K.C.B., G.C.M.G., VICE-PRESIDENT,
IN THE CHAIR.

CAPTAIN FRANCIS PETRIE, F.G.S., &c.. Hon. Sec., read the following Report:—

Progress of the Institute.

1. IN presenting the NINETEENTH ANNUAL REPORT, the Council is glad to be able to record the continued progress of the Institute.

2. The increase in the number of Members has been steady, notwithstanding the depression in commerce and agriculture through which all Societies have suffered; and there is every reason to believe that the Institute's sphere of usefulness is extending, and that it is yearly more effectively doing good service in disarming the spirit of infidelity, by its impartial investigation of those questions of Science which are alleged to conflict with the truths of Revelation.

3. As regards the Institute's Philosophical and Scientific Investigations, a greater number of home, colonial, and

foreign Members and friends now contribute to enhance their value, and to make the Institute fill that position which its aims demand. The paper read last year by Sir W. Dawson, K.C.M.G., F.R.S., affords an example of this: the discussion thereon was taken part in by many leading scientific men, including several who were not members.

4. The system adopted by the Institute, which enables Members in the most remote Colonies to contribute papers, and to take part in the discussions by forwarding comments upon those read, causes the Transactions to have a more than ordinary interest, not only to the Members at home, but especially to those abroad.

5. The following is the new list of the Vice-Presidents and Council:—

President.—The Right Hon. the Earl of Shaftesbury, K.G., F.R.S.

Vice-Presidents.

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Philip Henry Gosse, Esq., F.R.S.
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Trustees.

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F. B. Hawkins, M.D., F.R.S.
J. F. Bateman, Esq., F.R.S.
The Bishop of Bedford.
Admiral H. D. Grant, C.B.
Rev. F. W. Tremlett, D.C.L.
Surg.-Gen. Gordon, C.B., M.D.
R. H. Gunning, Esq., M.D., F.R.S.E.
Hormuzd Rassam, Esq.
Principal Wace, D.D.
Rev. J. J. Lias, M.A.
Insp.-General Colan, M.D.
General G. S. Hallowes.
Rev. Prof. A. I. McCaul, M.A.

6. The Council regrets to announce the decease of the following valued supporters of the Institute:—

The Rev. J. A. Aston, M.A., *A.*; Rev. T. Aveling, D.D., *M.*; Rev. J. Buller, *M.*; the Right Rev. Bishop P. C. Claughton, D.D., *A.*; Rev. Preb. G. Currey, D.D., Master of the Charterhouse, *M.*; Principal G. Fawcett, *M.*; the Right Rev. J. Jackson, D.D., Lord Bishop of London, *M.*; the Right Rev. D. Jacobson, D.D., Lord Bishop of Chester, *M.*; W. Hooley, Esq., *M.*; Rev. F. W. Lett, *A.*; Rev. J. Macnaughtan, A.M., *A.*; J. Scott, Esq., *A.*; Rev. Canon A. Stephen, M.A., *A.*; Rev. H. A. Stern, D.D., *M.*; Rev. O. P. Vincent, M.A., *C.*; J. J. Williams, Esq., *A.*

⁂ *M.* Member; *A.* Associate; *C.* Corresponding Member.

7. The following is a statement of the changes which have occurred during the past twelve months:—*

	Life		Annual	
	Members.	Associates.	Members.	Associates.
Numbers on 24th June, 1884	45	36	322	596
Deduct Deaths..................			8	8
Retired...........................			9	17
			— 17	— 25
			305	571
Joined between June 30th, 1884, and June 11th, 1885	3		14	61
	48	36	319	632
	84		951	

Total.................... 1035

Hon. Correspondents number 90. Total.... 1125

Finance.

8. The Treasurer's Balance Sheet for the year ending December 31, 1884, audited by two specially-qualified unofficial Members, shows a balance against the Institute of £3. 12s. 9d., after the payment of the liabilities for the year. The amount invested in New Three per Cent. Annuities is £1,302 18s. 9d. The Council desires especially to point out that the early payment of the subscriptions greatly tends to promote the success of the year's work.

9. The arrears of subscription are as follow:—

	1879.	1880.	1881.	1882.	1883.	1884.
Members ...	1	2	...	3	7	10
Associates ...	...	2	3	13	17	30
	1	4	3	16	24	40

---

* 4 Members and 4 Associates were struck off.

10. *Meetings.*

Monday, December 1.—"On the Recency of the Close of the Glacial Epoch in England and Wales." By D. Mackintosh, F.G.S.

Monday, January 5.—"The Religion of the Aboriginal Tribes of India." By Prof. J. Avery, Bowdoin College, United States.

Monday, January 19.—Paper, "Historical Evidences of the Abramic Migration." By W. St. C. Boscawen.

Monday, February 2.—"The Evolution of Savages by Degradation." By the Rev. F. A. Allen.

Monday, February 16.—"The Evolution of Religion." By W. R. Blackett, M.A.

Monday, March 2.—"Was Primeval Man a Savage?" By J. Hassell.

Monday, March 16.—"On the Relation of Fossil Botany to Theories of Evolution." By W. P. James. Communications from Sir R. Owen, F.R.S., Professor W. Carruthers, F.R.S., F.L.S., Dr. J. Braxton Hicks, M.D., F.R.S., F.L.S., &c.

Monday, April 13.—"Human Responsibility." By Rev. G. Blencowe.

Monday, April 20.—"Some Characteristics of Primitive Religions." By Rev. R. Collins, M.A.

Monday, May 4.—"The Theory of Natural Selection and the Theory of Design." By Professor Duns, D.D., F.R.S.E., *New Coll., Edinburgh, Pres. of the Royal Phys. Soc. Edin.*

Monday, May 18.—"On the Worship and Traditions of the Aborigines of America." By the Rev. M. Eells, M.A.

Thursday, June 18. (*Anniversary*).—"Egypt: Physical, Historical, Literary, and Social." By Rev. J. L. Porter, D.D., D.C.L., *President of Queen's College, Belfast.* Also, an Address "on the Progress of Science." By Professor G. G. Stokes, F.R.S., Lucasian Professor of Mathematics at Cambridge University (At the Society of Arts' House).

The Journal.

11. The Eighteenth Volume of the *Journal of Transactions* has been issued. Like the previous one, it contains many papers and communications from those whose names and scientific researches are a sure guarantee for the "full and impartial" character of their investigations. Among the subjects of special interest treated of in this Volume is that of the "Relation of Buddhism to Christianity." The writings of Bunsen, Carpenter, and others upon this subject having again raised this question, it was deemed desirable that the Institute should take such steps as would make the inquiry as thorough as the researches of late years admitted. These steps, first initiated in 1880, have resulted in the inquiry now published, in which the evidence is given of several whose study of the subject in India during a long

series of years affords a weight to their utterances which cannot be attached to the statements of those whose opportunities have been comparatively limited. A review of the papers in this Volume, so rich in contributions from authors well known in the scientific world, would be out of the question in a brief annual report.

It is satisfactory to note the value placed upon the Institute's *Journal*, as evidenced by Public Libraries in various parts of the world subscribing for the whole of the volumes.

Lectures.

12. At home and abroad the *Journal* (every paper in which is printed under the superintendence of its own author) is increasingly used by Members and others,* and it has been remarked by many that they have found it of much value when preparing lectures to show the falsity of the theory so often propounded, "that science and philosophy are alike opposed to religious belief." This idea has its advocates both at home, abroad, and in some of our colonies; and in many localities the Members of this Institute and others have made strong efforts to oppose it, and in so doing have found the *Journal*, as some have expressed it, "just what they needed." These have thus become centres for making the Institute known, as well as carrying out its high objects.

Translations.

13. The translation of portions of the *Journal* into foreign languages has long been a fact. Summaries of the proceedings at the Institute's more important meetings are now published in India in the five leading dialects, and a large Indian society has taken a set of the second series of the *Journal*

---

* It is gratifying to observe the results that have followed in more than one instance from the use to which Members and friends have put the Transactions. In one important colony, a formidable society, established by atheists, founded several schools for boys and infants (in one *infant* school there were seventy, in another sixty-three, and lesser numbers in others), and sought by lectures and publications to prove that the progress of science had given a death-blow to the Christian religion. The local Members of the Institute held a meeting, and arranged for lectures, to be compiled from the Institute's Transactions (and a telegram was sent 12,000 miles for a further supply of copies). All the infidel leaders were specially invited to the lectures (with a view to attacking the evil at its root), and very shortly afterwards the vice-president of the infidel society resigned. His "Abjuration" has been published: it is a strong denunciation of the party of which he now ceases to be a leader.

(vols. 6 to 18), with a view to translating and publishing a selection of the papers in India. Members abroad may do much to help the Institute's aims by fostering the translation of the Transactions in their respective localities.

The Special Fund.

14. The advantage of this Fund to the Institute is very great. It is used—I. To extend the Institute's library of reference.—II. To make the Institute more known throughout the world.—III. To publish a *précis* of its most important papers.—IV. To promote the publication in adequate quantities of the twelve Papers in the People's Edition and secure their circulation through booksellers at home and abroad.*

15. The progress of the Institute in the various colonies and in the United States during the last eight years has enabled it to mature a self-supporting scheme by which the People's Edition might be efficiently brought before the public. This scheme was first carried into effect last year in the Australian Colonies and New Zealand with signal success; the same steps have now been taken—so far as funds have allowed—in the United States, Canada, and the South African Colonies. As regards India, the first effort has been made, but its satisfactory development is not possible without a larger Special Fund.†

---

* It seems necessary again to call attention to the immense exportation by the English Secularist Societies of quasi-philosophical publications of an avowedly Atheistic character, not only to our colonies, but also to the chief cities of the whole world. These societies are also indirectly promoting the secularisation of education in India and the colonies, even in schools founded by Christians for mixed education.

† Only twelve of the papers read during the past twelve years are to be had in the People's Edition (price 6d. each); as a rule, the discussions are not added to these.

The Foreign and Colonial publishers of the People's Edition are given on the Title-pages of the Volume and Quarterly Parts. They are—

People's Edition.

For the United Kingdom: may be had through any bookseller.
Australia, New Zealand, &c.: G. Robertson & Co., Lim.
Canada: Dawson, *Montreal;* Willard Repository, *Toronto.*
India: Thacker & Co.
South Africa: Juta, *Cape Town;* Davis, *Natal,* &c.
United States: G. P. Putnam's Sons (for all the States).

Conclusion.

16. In the "Address" issued at the foundation of this Institute, the following words were used:—"The idea that Science and Revelation are directly opposed to each other is spreading with fearful rapidity:" and it was stated that one of the "Institute's objects" would be "to investigate fully and fairly, but rigidly, all the facts and arguments put forth as truths newly discovered by Science and as being contradictory to the Scriptures." The *Journal* teems with papers and investigations which carry out this object, and it is even now satisfactory to note the many points on which the Science of twenty years ago, on account of the advances of Knowledge and the steady manner in which this Institute has done its work, has receded from controversy with Revelation. In History and Physical Geography this is notably the case. In Geology and other sciences much has already been done; and the way in which it has been accomplished gives full hope that in the future, as in the past, the work of the Institute will be, in the words of its motto, *Ad Majorem Dei Gloriam.*

SHAFTESBURY,
President.

SPECIAL FUND IN 1884,

For the People's Edition, &c., see Sec. 14.

	£.	s.	d.
S. Morley, Esq. (*for two special purposes*)	50	0	0
G. Harries, Esq.	20	0	0
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Rev. E. Male, M.A.	1	1	0
Miss G. Harrison	0	10	0
	£122	15	0

The following Balance-Sheet was then read:—

NINETEENTH ANNUAL BALANCE-SHEET, *from 1st January to 31st December*, 1884.

RECEIPTS.	£.	s.	d.	£.	s.	d.
Balance brought forward...						
Subscriptions:—						
2 Life Members	42	0	0			
1 Life Associate	10	10	0			
				*52	10	0
1 Member, 1880	2	2	0			
2 Members, 1881	4	4	0			
3 „ 1882	6	6	0			
14 „ 1883	29	8	0			
229 „ 1884	480	18	0			
6 „ 1885	12	12	0			
1 Member, 1886	2	2	0			
16 Entrance-fees	16	16	0			
1 Associate, 1879	1	1	0			
2 Associates, 1880	2	2	0			
1 Associate, 1881	1	1	0			
4 Associates, 1882	4	4	0			
24 „ 1883	25	4	0			
428 „ 1884	449	8	0			
21 „ 1885	22	1	0			
2 „ 1886	2	2	0			
1 Associate, 1887	1	1	0			
				1,062	12	0
1 Year's Div. on £1,302. 18s. 9d. New 3 p. c. Ann.				38	5	6
Donations to Special Fund				122	15	0
Sale of Journals, &c.				78	4	4
Balance, Dr.				3	12	9
				£1,357	19	7

EXPENDITURE.	£.	s.	d.
Balance, Dr.	10	12	9
Printing	321	13	7
Binding	23	12	1
Reporting	32	5	0
Stationery	65	17	7
Postage and Parcels (Home and Foreign)	178	6	8
Advertising	36	14	8
Expenses of Meetings	41	2	6
Rent to Christmas, 1884	160	0	0
Salaries for Year	96	8	10
Housekeeper	19	8	3
Travelling Expenses	10	10	8
Coals	3	16	8
Gas and Oil	6	2	10
Water Rate	3	0	0
Insurance	0	12	0
Sundry Office Expenses	3	11	0
Library, Books, Repairs, &c.	28	7	11
Expenses of Management	315	0	0
Bankers' Charges	0	16	7
	£1,357	19	7

We have examined the Balance-Sheet with the Books and Vouchers, and find a Balance due to the Treasurer of £3. 12s. 9d.

G. CRAWFURD HARRISON, } *Auditors.*
JOHN ALLEN, }

W. N. WEST, *Hon. Treas.*

* For Investment in 1885.

Mr. A. McArthur, M.P.—I have great pleasure in moving "That the Report be received, and the thanks of the Members and Associates be presented to the council, honorary officers, and auditors for their efficient conduct of the business of the Victoria Institute during the year." I am sure I shall best consult the wishes of those present and the interests of the Institute by not occupying more than a minute or two of your time. I may, however, be permitted to say that I think the Report which has been presented this evening is, in every respect, highly satisfactory. The concluding portion of it refers to the Address issued at the foundation of the Institute, and, with regard to that subject, I may say that I recollect perfectly well the occasion on which our late lamented friend Mr. Reddie, who may be called the originator of the Society, the Rev. Walter Mitchell, myself, and a few others, called upon the Earl of Shaftesbury, and requested him to accept the position of President of the Institute. Lord Shaftesbury very willingly complied, but that was a day of only small things. We had then only 150 members, and I recollect attending a meeting at which I ventured to express the hope that we might ultimately enrol within our body at least 1,000 members. That statement was, at the time, regarded as a flight of imagination which was not likely to be realised by the course of events; but I am happy to say that at the present moment, as I find from the Report now presented, we have, including our honorary correspondents, 1,125 members of the Victoria Institute. (Cheers.) I am glad also to find that the number is steadily growing, notwithstanding the great depression of trade that has so long existed, and the number of members we have lost by death. There is, however, one item in the Report which can hardly be called quite satisfactory. I allude to the fact that the Treasurer's statement shows a balance against the Society of £3. 12s. 9d. It is intimated, however, that if the subscribers and honorary members would pay their subscriptions earlier in the year, the Institute would thereby effect a considerable saving. When we reflect on the great work we have been doing, and on the position the Institute now occupies, when we see how it is valued and esteemed, not only in this country, but in India, the Australian colonies, Canada, and the United States of America,* and indeed in every other part of the world in which the English language is spoken, or where the papers are translated into foreign tongues, we must recognise the fact that the Institute has been doing a large amount of good, and is consequently pre-eminently worthy of our support. I trust its members will endeavour to extend its influence by bringing in as many new members as possible. The resolution I have the honour to propose tenders our thanks to the council, honorary officers, and auditors for their efficient conduct of the business of the Institute during the year. I think I am very well qualified to propose this resolution, inasmuch as I am sorry to say I can claim no share or very little share of the honour thus conferred upon those mentioned in it. My time has been so much occupied that I have not been able to attend many of the meetings of the council; still I know that a large number of members do devote their time to the interests of the Society, and, therefore, I think they are well entitled to our thanks, especially our able and invaluable friend, Captain Francis Petrie (hear), who has the success of this Institute so much at heart. (Applause.)

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* Where the Institute's members have founded an "offshoot."—*The American Institute of Christian Philosophy.*

Professor G. G. STOKES, M.A., D.C.L., F.R.S.—I have great pleasure in seconding this resolution. I intended to have prefaced my remarks by reading the last paragraph of the Report to which this resolution refers; but, as that has just been read by the Honorary Secretary, I will not detain you by again doing so. In regard to many of our objects, I may, perhaps, be permitted to say a few words respecting the recent progress of science, or rather some of the branches of science, and to inquire, whether there is anything in that progress which is contrary to what we have learnt to regard as the teachings of Revelation? I have purposely used the phrase "some of the branches of science," for there are few men, if any, at the present day who would be competent to speak upon all or even many of those branches. Science has of late greatly extended itself in various directions. There are two great divisions of science which you may, in the first instance, consider; I allude to the physical sciences, as they are called, and the biological sciences. With regard to the latter I shall say nothing, as my studies have not led me in that direction. In the few words I propose to address to you, I shall confine myself to the physical branches; and I request that our Chairman will be so good as to give me notice, when he thinks I am trespassing too long upon the time of the meeting; because I am aware that there is a prepared Address, which we are expecting to hear read very shortly. If we go back for the last twenty years or so, I may mention as perhaps one of the most striking advances that have been made in science, especially as having some possible connection with subjects which the Victoria Institute is more especially designed to consider, the use that has been made of the spectroscope, I mean the application of that instrument; for, in point of fact, it has long been used, although it is only of recent years that it has come into general employment. Here there are certain applications about which I need not say anything, because they do not bear upon our immediate subject; but I would refer especially to the information we obtain by its means regarding the constitution of the heavenly bodies. It is now sixty or seventy years since Frauenhofer pointed out, for the first time, that the different fixed stars have spectra of their own,—that whereas the solar spectrum exhibits certain dark lines, the spectra of the stars resemble it in this respect, but the dark lines they show do not agree, or, at least, do not in all cases agree, with those exhibited by the solar spectrum; nevertheless, there is a general similarity in the character of the spectra evidenced in the two cases. At the time, however, when Frauenhofer made these observations, the interpretation to be derived from those lines, as to the constitution of the different heavenly bodies, was not known. But we now know that many of those dark lines indicate the existence of certain chemical elements, and thereby afford indirect evidence of the existence of such elements in the most distant bodies of the universe, such as the fixed stars. This exalts our idea of the universality of the laws of Nature; and surely there is nothing in that which can be at all opposed to anything we may have learned from Revelation. Indeed, I think we may take a precisely contrary view, and say that the notion that there is any such opposition to the teachings of Revelation would rather savour of the saying of the Syrians of old, that the God of the Hebrews was "God of the hills, but not God of the valleys." From the stars I now pass to our own sun. We have here an abundant quantity of light to work with, and can apply the spectroscope to a greater extent, while working with a purer spectrum. The result of that application is to show that chemical elements exist in the sun, similar, in many cases, to those we find existing on our own earth; but this is not all. What I would at present chiefly dwell upon is this, that the character of the spectrum indicates that those elements are in a state of incandescent vapour,—a fact that will afford us some idea of the enormous temperature of the central luminary of our system. To think that iron should exist as a vapour, as an elastic fluid resembling the air we are breathing in this room, so that the temperature of the sun must be considerably above the boiling-point of iron, will help us to acquire some idea of what that temperature must be! This fact is, of course, utterly inconsistent with the idea of the existence on the sun's surface of any living beings at all approaching in character those we see on earth. In former times astronomers speculated on the possibility that the luminous part of the sun was confined to an outer envelope enclosing a nucleus which was at least comparatively cool; and some of them had even gone so far as to speculate on that nucleus being cool enough to permit its habitation by living creatures. There were great difficulties, in connection with the theory of heat, in our at any time adopting such a view; but, whatever may have been the supposition formerly entertained, I think it may be considered that nowadays, through the researches made with the aid of the spectroscope, this theory is utterly exploded. Here we have a body of gigantic size, as compared with our own earth, and in a state totally unfit, so far as we know, for the habitation of living beings. But is there any real difficulty in this conception? Are we to regard the whole of that vast mass as a waste of material? If we turn to the animal creation, we find that as we ascend in the scale of animal life the specialisation of function becomes more and more apparent. Take the case of the structure of mammals in general, and let us, from the lower mammals, ascend to man. The general structure of the skeleton is still the same, but the forelegs cease to be used, in the higher type, for purposes of locomotion, and are appropriated to totally different uses. This, however, so far from being derogatory to our own species, is looked upon as a mark of superiority. Why, then, may we not, in the same manner, look upon the differentiation of office in the different members of the solar system as a mark of superiority, instead of an evidence of inferiority? Here, as I have said, we have the sun in a state rendering it utterly unfit, as far as we know, for habitation by living beings, but still performing most important functions in relation to the whole of the solar system. This brings me to another philosophical doctrine which has come very much forward of late years, and which is known by the name of the conservation of energy. It would take too long a time, and lead me too much out of the way, to give any precise definition of what we mean by this; but I will endeavour briefly to give a general notion. Let us take the case of a steam-engine. The steam-engine may be said to do work, but that work is done at the expense of something; there is a loss of something: the coals under the boiler are consumed, and were it not for that consumption we could get no work out of our engine. But what are the coals which have to be consumed in order to produce the requisite result? They are the relics of extinct vegetation. Whence comes the energy resident in the coals, together with the oxygen of the air? If the two are burnt, we get carbonic acid, and can do nothing further in the way of combustion. It all comes, originally, in the shape of radiation from the sun. Under the influence of solar radiation, under the influence of light, plants are able to decompose, by a process which we do not understand, the carbonic acid of the air, thus appropriating the carbon, and at the same time setting the oxygen free. This is exactly the reverse of the process which takes place under the boiler of a steam-engine, where the carbon is combined with oxygen, and the combination produces the heat by means of which the engine is worked. Were it not for light, plants could not grow—I mean plants in general; the fungi are, so to speak, vegetables of prey; and, just as animals are all of them dependent for their life upon plants, so are the fungi. I say all animals are dependent upon plants for their life, for, although lions and tigers do not eat plants, they eat the animals which do. If there were no plants, you would not have those animals, and if you did not have those animals the lions and tigers would starve, so that in one way and another the radiant energy coming from the sun is, so to speak, essential to the carrying on of life on this earth as we know it, and it may be, by analogy, of life in the other planets of the solar system. This differentiation of function, of which I have spoken, is no derogation to the construction of the system, but rather the reverse. So much for the conservation of energy. I would refer, in conclusion, to another philosophical doctrine which has been brought into notice of late years, and which is called the dissipation of energy. According to the principle of the conservation of energy, there is no loss of energy from the sun, but the heat radiated from that orb is gradually converted into energy which travels through space in the shape of radiation, and a portion of which is arrested by the earth and the substances upon its surface, whereby it is made to do most important work. But, although, in the strict sense of the word, there is no loss of energy, energy may be given off in a form in which it can be no longer of service to man. When it is concentrated in a body, as it is in the sun, *par excellence*, or, in a lesser degree, in a kettle of hot water, it may be made available for those transformations on which depend the process of life, and of our various manufactures. So far as our physical knowledge goes, the energy stored up in the sun is gradually expended in this sense and gradually lost. Accordingly, the sun is not intended, so far as we can see, for eternal duration in the same state, and performing the same functions as we see it perform at the present day. But in the same way as we go forward in our contemplations we may also go backward, and, if we turn to the nebulæ, the spectroscope has shown us that they consist of incandescent gas, which looks as if it were in process of concentration to form, as it were, the stars. Thus we see that, when we look at the state of nature on a broad scale, we find a state of progress. Our calculations enable us to predict, years and years beforehand, the places of the heavenly bodies; but years and years are but as drops in the ocean when compared with the duration of time, and, when we look at the state of the universe on a grand-scale, progress, and not periodicity, is undoubtedly what we see, that is to say, not endless periodicity. If we contemplated nothing but periodicity, perhaps the mind might rest on the idea that here is a state of things that will go on for ever, and that has been going on for a past eternity; but when we look, as I have already said, on the state of the universe on a grand scale, and see that it is one of progress, that idea is shut out, and we are obliged to refer to a First Cause. (Applause.) This I take to be an important conclusion of modern science in its bearings on those subjects for which the Victoria Institute was founded. (Cheers.) I am afraid, however, I have already occupied too much of your time. (Renewed applause.)

The resolution was carried by acclamation.

Mr. D. **Howard**, F.I.C.—I have to assure you, on behalf of the Council of the Victoria Institute, that they greatly value the confidence you continue to express in their efforts to conduct the business of this Society. They do not pretend to have a very brilliant existence in many ways, for, if I may so illustrate their position, in well-ordered ships you will not find the crew or the officers so conspicuous as you might have imagined. There is a good deal of the most important work of a vessel which is done out of sight: and a good deal of our work must of necessity be entirely out of sight. In speaking of the work of the Council I would cordially endorse Mr. McArthur's concluding remark. I have already intimated that the work of the Council is not of the most conspicuous character; but, however that may be, it is none the less cheerfully rendered for the cause of this Society. (Hear, hear.) We have to thank our many able friends who have given papers, and who have assisted the work of the Institute by valuable communications in the shape of correspondence; and we have also to thank those who have assisted in the discussions that have taken place at our meetings. But, apart from such conspicuous work as this, there is a great deal to be done by the Council in the shape of anxious consideration as to what is going on—a great deal of thought to be bestowed on the changes of ground that take place in regard to matters of scientific discussion, and how best those changes may be met. The task of the Council in this respect has not always been a very easy one; but undoubtedly, since the Victoria Institute was founded, there have been, in many respects, changes for the better. A great many things that are put forward as having a tendency to destroy the Christian faith have been discovered to be not such very serious matters, after all. Our faith has survived them as it has already survived so many attacks directed against it, and, as I believe, it will survive them to the end. But still I think we should remember that, although the rock will never be washed away by these waves of passing opinion, there may be some ill-fated loiterers upon that rock who have not taken a sufficiently firm hold, and who may be washed away. It is for them, therefore, rather than for the rock itself, our care should be. (Hear, hear.) We see also that there are those who want some weapon to use against a faith they will not accept, and so long as there are those who, while they value their faith, are over-conscious of the danger to which it is exposed, and therefore cannot believe in its eternal strength, because they are frightened about it, so long will there be a need for the efforts of societies such as ours. Not that we lay claim to any monopoly in such efforts; for while there are so many brilliant defences of our belief on the lines of this Institute,—while there are invaluable works like those written by the Duke of Argyll on the *Unity of Nature*, and many other treatises of great value,—although there are not many that can be regarded as more valuable than that,—we shall gladly welcome the fact that we are not alone in the field. (Hear, hear.) What we can do we shall continue to do, asking, at the same time, your kind help, assistance, and confidence, and fearing not for the Faith itself, but only for those who may fall away from the Faith. (Cheers.)

[The following address was then read by the Rev. J. Leslie Porter, D.D., D.C.L., President of Queen's College, Belfast, who prefaced his paper with these remarks:—]

You have heard this evening a very valuable and suggestive speech by Professor Stokes—who now occupies that Cambridge professorial chair which was once held by Sir Isaac Newton—on the results of modern science; the conclusion to be drawn is, that when we investigate Nature in its greatest depths we are necessarily led from Nature to Nature's God. I do not intend to say anything of modern science. It is my purpose this evening to lead you back to a scientific age some four, five, six, or seven thousand years ago, and to point out that the records that were written on the tombs of Egypt, and found in the papyri which have lain for ages in those tombs, tend to illustrate the truth of the grand record which we have in God's Holy Word.

EGYPT: PHYSICAL, HISTORICAL, LITERARY, AND SOCIAL. By the Rev. J. LESLIE PORTER, D.D., D.C.L., President of Queen's College, Belfast.

JUST about thirty years ago I first set foot in Egypt. Since that time I have paid several visits to the country, and have had full opportunity of inspecting its modern towns, and of examining that marvellous system of irrigation which is the sole source of its wealth. I have also explored many of its grand temples and tombs. I have tried to discover the origin and object of its pyramids, obelisks, sphinxes, and colossal statues. I have spent much time in the study of its unique historic records, inscribed upon the walls of Karnak, Luxor, and Abu Simbel, and written upon papyrus rolls which have lain for thousands of years entombed with the embalmed bodies of the mighty dead, and are now, year after year, being brought forth by successful explorers, perfect as when deposited beside the mummies of the Pharaohs, and are being deciphered by scholars. I have inspected also, with absorbing interest, the interiors of those vast rock-hewn sepulchral chambers, on whose walls are depicted with singular minuteness of detail, artistic skill, and brilliancy of colouring, the manifold arts and industries, field labours and domestic pursuits, amusements, battles and conquests, trials and punishments, royal processions and state formalities, religious observances, funeral rites and ceremonies,—in a word, the whole life of the ancient Egyptians, in their best days, from the monarch to the peasant, from the warrior triumphing to the chained captive and down-trodden slave. I have spent days and days, with ever-increasing interest, in the Museum of Boulak, where the French and German savants, Brugsch, and Mariette, and Maspero have, with extraordinary industry, research, and scholarly instinct, accumulated treasures of ancient art and literature unequalled in the world. I have also, during my visits, talked familiarly with the cultivators of the soil,—those *fellahîn*, as they are called in their native tongue, who are doubtless the descendants of the aboriginal Copts. I have talked with the village *Sheikhs*, and district *Mudîrs*, the hard task-masters of the fellahîn. I have talked also with the Beys and Pashas, men of an alien race and foreign language, who have long usurped authority, and who continue to oppress the people and spoil the country.

I thus claim to know something of Egypt; and my wish now is to give, in the shortest possible space, a sketch of its general geography, history, condition, and prospects. It must only be a sketch, for to treat any of those topics fully would take a volume.

Physical Geography.

In many respects Egypt is the most interesting and remarkable country in the world. Its physical geography is unique. Its historic records are the oldest extant, not even excepting those of the Hebrews or Chaldeans. And those records have this peculiarity, that they touch, and to some considerable extent illustrate, the history of nearly every great nation of ancient and modern times. The primeval Hittites, the Jews, the pastoral Arabs, the commercial Phœnicians, the warlike Assyrians and Persians, the Greeks and Romans, are all figured on the Egyptian monuments, and described in their hieroglyphic inscriptions, or in their voluminous hieratic papyri. Egypt is thus a grand storehouse of antiquarian lore —a museum of primeval art, revealing the origin and development of letters, science, and useful inventions.

Then, again, in later ages, Egypt's new capital, Cairo, was enriched with some of the most elegant and gorgeous mosques and tombs of the Califs. The valley of the Nile became in succession the battle-field of Tartar and Crusader, Turk and Frank; and now, in our own day, the eyes of the civilised world are concentrated upon that strange conflict between the fierce tribes of the Soudan and the armies of England.

The history and antiquities of Egypt have had for me, during many years, a singular fascination, which, I need scarcely say, has not been diminished by recent events. I venture to express a hope that I may be so fortunate as to succeed in inspiring at least some of those who hear my words with a little of my own enthusiasm in the study of a subject which I have found to be, not only of absorbing interest, but of vast—even national—importance.

Egypt is the child of the Nile. The Nile deposits originally formed its soil; and the Nile, and the Nile alone, renders that soil perennially fruitful. Were the Nile, by some convulsion of nature or by some gigantic work of engineering skill—neither of which is impossible—turned out of its present channel away up at Khartoum, or at any other point above Wady Halfa, Egypt would speedily become a desert. Water is absolutely necessary to fertility, and in Egypt there is scarcely any rain, and no water for irrigation save that of the Nile. It is a remarkable fact that the Nile does not receive a single tributary below Berber, though the distance thence to the sea, taking into account its tortuous course, is nearly two thousand miles. The volume of water decreases as it descends, partly owing to evaporation, but mainly to its employment for purposes of irrigation along the banks.

Ancient Names.

The most ancient name of Egypt—that found on its hieroglyphic inscriptions—is *Kam,* which means "Black," and probably originated in the Nile deposits of black mud which cover the country. For the same reason apparently the Nile itself is called in the Bible (Josh. xiii. 3; Is. xxiii. 3) *Sihor,* "Black" or "Turbid." Perhaps one might be right in assigning the same origin to the name given to Egypt by the Psalmist (cv. 23, 27; lxxviii. 51), "Land of *Ham,*" that is, "The Black Land." The Hebrew *Ham* bears a close resemblance to the Egyptian *Kam,* and has the same signification. In fact, *Ham* is also an Egyptian word.

Egypt had in early ages, and still has, another name, *Misraim,* a dual form signifying "the two Misrs," that is, Upper and Lower Egypt. The former embraces the valley of the Nile from Memphis (or Cairo) to Syene; the latter is the Delta.

The word *Misr,* or *Masur,* means "a defence," and especially "a boundary defence," and was most probably derived from those border forts built to protect the rich valley against the predatory incursions of the restless and warlike nomad tribes of the neighbouring deserts. Such forts were requisite from the very earliest period of the country's history.

The name *Egypt* is not found on ancient monuments, and is not used by the natives. It appears to have originated in some way with the Greeks, and its meaning is uncertain. Poole suggests that it may be derived from the compound *Ai Kuptos,* "Land of the Kopts." It was first given by

Homer and Strabo to the Nile, and then was extended to the whole country which the Nile has created, and still nourishes.

Ancient records represent Egypt as consisting of two provinces:—*Ta Res*, "The Southern Province"; and *Ta Meshit*, "The Northern Province." They correspond to the two divisions, Upper and Lower Egypt, already mentioned. The sovereign of each province is distinguished on monuments by a special crown. That of the Upper Province is white, and in form something like an Eastern water-jar; that of the Lower is red, and in shape not unlike a child's arm-chair. Each sovereign had also a distinctive title. The Upper was named *Shuten*, "King"; the Lower, *Shebt*, "Bee." May not this illustrate some passages of the Bible otherwise very obscure? The initial hieroglyphic sign of the word *Shuten* is a fractured reed; and the prophet Isaiah warned Israel, at a critical period of its history, in these figurative words: "Lo, thou trustest on the staff of this *bruised reed*, on Egypt" (xxxvi. 6; cf. Ezek. xxix. 6, 7); and the same prophet, in another place, speaks thus: "The Lord shall hiss for the *fly* that is in the uttermost part of the rivers of Egypt; and for the *bee* that is in the land of Assyria" (vii. 18). This is altogether characteristic of the style of Eastern imagery, playing on peculiar proper names.

When the two provinces were united under one sovereign he took the double title *Shuten-Shebt*, and assumed the double crown, that of the Upper Province being placed above, or rather set in, the other, as may be seen in statues of Rameses III. In one of the courts of the Temple of Rameses at Medinet Habou, in Thebes, there is an interesting representation of the coronation of the monarch, who, in the accompanying inscription, is said to have put on the crown of Upper and Lower Egypt.

Egypt is but a small country to have played such an important part in the history of the world. It is made up of the Delta and the Nile Valley as far south as the First Cataract. The Delta, as the name implies, is a triangle, its base on the Mediterranean, extending from Alexandria to Port Said, about 150 miles. Its apex is at Cairo, and each side, roughly estimated, measures about 120 miles. A large portion of this area, however, perhaps nearly one-half, is lake, marsh, or desert, unfit for cultivation. South of Cairo there is only the Valley of the Nile, extending about 580 miles to Syene, and varying from two to twelve miles in width, of which the river averages one mile. The valley is hemmed in on each side by naked deserts. In places there are high cliffs bordering the alluvial banks, and in places ranges of yellow rocky hills, hopelessly barren. The entire superficial area of the country which could at present be reached by the waters of the Nile, and thus made productive, scarcely exceeds 10,000 square miles, and, probably, not more than one-half of this is now under cultivation. The arable land of Egypt is about equal in extent to Yorkshire.

Such is Egypt proper,—the country extending along the Nile from the Mediterranean to the First Cataract at Syene. At the latter place the river bursts from the uplands of Nubia through a ridge of granite and a series of rugged cliffs and islets, the island of Philæ, with its stately temples, lying in the centre of the torrent at the top of the rapids. The quarries which supplied the architects of Egypt with that beautiful rose-coloured granite so largely employed in temples and monuments are situated in the adjoining cliffs, and the stone takes its familiar name, Syenite, from the adjacent town, Syene.

Above Syene the Nile Valley runs south a little more than 100 miles to Korosko, where it turns westward, and then makes a wide sweep south-west to Dongola, about 300 miles from Korosko. Here it curves to the east and north-east about 300 miles more to Abu Hamed, which, by the direct desert route, is only 230 miles from Korosko. From Abu Hamed to Berber is 140 miles, and from Berber to Khartoum 210, the general direction being south. The entire distance from Cairo to Khartoum in a straight line is 1,000 miles, while, by following the tortuous river, the distance is well-nigh doubled. When the water is low, as it is always between December and July, the passage of boats is extremely difficult, and, in places where there are rocks and rapids, next to impossible. When the river is high, boats pass up and down with comparative ease and safety.

The Inundation.

The annual inundation of the Nile is most remarkable, and upon it depends the fertility, indeed the very existence, of Egypt. I shall, therefore, try to explain its nature and causes. At Khartoum the two main tributaries of the Nile unite, having the town in the fork between them. The name of the western tributary is *Bahr-el-Abiad*, "The White River," so called from the prevailing tint of its water. Its sources are in the great lakes of Central Africa, the Albert and Victoria Nianza, and in the surrounding basins and uplands, comprising an area of nearly 200,000 square miles. The lakes are about 3,000 feet above the sea. The White Nile is broad and deep, but generally sluggish. When seen from the north as one approaches Khartoum, it looks like a great lake. It may be regarded as the real and permanent source of the River of Egypt. Its volume is always great, winter and summer, and during the equatorial rains it does not rise more than a few feet. Were its current diverted in any way above Khartoum, the other tributaries would not supply a sufficient volume of water during the dry season to reach Lower Egypt. The White Nile supplies the permanent river; the other tributaries produce the inundation.

The second great tributary of the Nile flows past the east side of Khartoum, and is called *Bahr-el-Azrak*, "The Blue River," or more properly "Black," for the Arabic word has also this meaning. The colour during the inundation is deep purple, approaching black. Its chief sources are high up in the mountains of Abyssinia. When the equatorial rains set in, which they do regularly about the first week of June, the Black Nile, before that time low and sluggish, suddenly swells into a furious torrent, tearing away the soft soil of the banks, and carrying it in solution down to the lowlands, to be deposited on the surface of the plains. The width of this tributary at Khartoum is about 300 yards, and when in flood its depth is 30 feet.

About 170 miles below Khartoum another tributary, the *Atbara*, falls into the Nile. Its sources are also in the mountains of Abyssinia; and it produces, perhaps, even a greater influence on the fertilising qualities of the waters of the Nile than either of the others. Its course and current are thus in substance described in Sir Samuel Baker's valuable work, *The Nile Tributaries of Abyssinia.* In the beginning of the year, and during the spring months, the bed of the Atbara is in part dry, and in part filled with stagnant pools, swarming with crocodiles, hippopotami, huge turtles, fish, and reptiles of various kinds. The banks, throughout a long reach of country near the base of the mountains, are formed for the most part of dark alluvial soil. It has numerous tributaries of a like kind. Immediately on the outburst of the summer rains the channel of the Atbara is filled to overflowing, and the mad torrent foams along with terrific force, undermining and tearing down the soft banks, and carrying the dissolved soil into the Nile.

The annual rise of the Nile is first observed at Khartoum early in June, but it is three weeks later ere it begins to be seen at Cairo. That is a time of great rejoicing, and the daily rise is proclaimed through the city by special criers, with characteristic expressions of praise to God and the Prophet.

The rise continues steadily till the end of September, when it attains its maximum of from 24 to 26 feet. There is a building in the little island of Roda, close to Cairo, containing a Nilometer, for measuring the rise of the water from day to day, and its maximum from year to year. The building is said to have been founded here in A.D. 705, and rebuilt in its present form in A.D. 850. We learn that during the time of the early Pharaohs a Nilometer was erected at Memphis, and maintained there for a lengthened period. There was another on the island of Elephantine, opposite Syene; both it and that at Memphis have disappeared.

One of the great festivals of Cairo is connected with the inundation. When the river attains a height of about 21 ft., which occurs generally between the 6th and 16th of August, the embankment which shuts out the river from the great Cairo Canal is cut by the governor of the city or his deputy: the water then rushes in, amid acclamations of joy from assembled multitudes, and is taken over the country for purposes of irrigation. The whole plain is intersected with such canals, and the rising water, being let into them at various points along the river-banks, is stored in enormous tanks and reservoirs for use during the long dry season.

The regulation of the water supply and its distribution over the surface of the ground have from the earliest ages been managed with marvellous ingenuity and scientific skill. Irrigation is of vital importance to agriculture, and it is essential to the prosperity of Egypt. It is requisite for the landed proprietor, and the population generally, that the water should be distributed in due proportion to each farm and field, and in such manner also as that the low-lying sections shall not get greater advantage by leakage or otherwise than the higher. To effect this, the Egyptian engineers measured with scrupulous accuracy the elevation of each irrigated section, and constructed canals, tanks, and dykes to suit the whole. Each little field is levelled, surrounded by a bank of earth, and provided with a properly-graduated sluice, through which the water is admitted. Skilled superintendents are also appointed by the local government, who regulate the time during which the water is allowed to flow into each section and field. The amount of taxation levied depends upon the size of the farm, and the quantity of water supplied for irrigation.

When the Nile is low the land near its banks, both in Egypt and Nubia, is irrigated artificially by means of buckets attached to long poles slung on cross-beams between upright posts. The buckets are dipped into the river, then raised, and emptied into canal or reservoir. This machine is called

Shadoof. Another machine is a large vertical wheel, called *Sâkiyeh*, having round it a row of earthen pots. It is turned by rude machinery, generally moved by cows, and the pots, being filled in the river into which they descend, are emptied into a trough, and the water carried away over the soil. The ceaseless mournful creaking and groaning of the Sâkiyehs are familiar to every traveller, and seem to constitute one of the chief glories of the Nubian peasant and the Egyptian *fellâh*, who would scorn to grease the axles and thus drown the music, and who greatly prefer to put the grease upon the matted locks of their own hair.

I have thus attempted to give a general, but necessarily brief and incomplete, sketch of the sources, course, and inundation of the Nile. There are still, however, one or two points of interest to be noted.

The Upper Nile, from the place where it is joined by the Atbara, flows, for the most part, with a very rapid current through a narrow rocky ravine, shut in by cliffs of sandstone, limestone, and granite, until it reaches the Cataracts of Syene. The bed of the river is frequently broken by little islands, rocks, and rapids. The latter are called Cataracts, and there are six of marked prominence between Syene and Khartoum. So long as the river is closely hemmed in, the current is swift and broken, and the mud it has brought down from Abyssinia and elsewhere is held in solution. During the inundation it rises in some parts of Nubia as much as 40 feet, while at Cairo the maximum rarely exceeds 26 feet; and in the Lower Delta it is not more than 4 or 5 feet. When the river passes Syene and enters Egypt proper, the valley is much wider, the current gentler, and the banks much lower. During the inundation the water spreads gradually over the flat country, leaving, when it passes away and evaporates, rich deposits on the surface of the ground.

Another fact is noteworthy. In Egypt the deposit is left in the river-bed as well as on the flat banks. The bed is thus slowly rising, and the inundation extends proportionally farther and farther outwards, materially increasing the ground capable of cultivation. It has been ascertained, from careful examination of the sites of the monuments on the plain of Thebes, that the soil formed by deposits has, since the erection of those monuments some 3,500 years ago, encroached on the desert about one-third of a mile; while the ruins of Heliopolis in the Delta, which once stood above reach of the inundation, are now buried in mud deposit to a depth of nearly 7 feet. The traveller also observes that many of the villages in the Delta are perched on mounds, composed mainly of the *débris* of older habitations destroyed by floods. Other villages are surrounded by great dykes, as in Holland. When the Nile rises much above its average height, the result is disastrous; this, however, is a rare occurrence.

Some of the gigantic engineering works of the ancient Egyptians are deserving of special notice. Among the earliest was that huge embankment by which Menes, the first historic Pharaoh, changed the course of the Nile, from its original channel along the foot of the Libyan hills, to the centre of the Valley eastward, thereby leaving a site in the old bed for the great city of Memphis. Other engineering works of equal magnitude were constructed in various parts of the country. Probably the most ancient was the canal called *Bahr Yusef*, "Joseph's River," taken from the Nile below Thebes, and carried along the higher ground on the left bank, a distance of some 200 miles. From it a branch was led off by Amenemha III. (*circa* B.C. 2500), through a ravine and deep cutting in the Libyan range, to the Fayoum, a low-lying, cup-shaped region, with an area of 600 square miles. The canal is 30 feet deep, 160 feet wide, and about 10 miles long. At the place where it entered the valley a reservoir, 14 miles long by 7 miles wide, was constructed by drawing an embankment across the southern end of the valley. Here the surplus water was stored, and by an elaborate system of aqueducts and sluices the entire district was irrigated and made one of the most fruitful provinces in Egypt, still abounding in corn, vineyards, and, what is not found elsewhere in the country, olive-groves. Fayoum was the site of the famous Labyrinth erected by Amenemha, also of several pyramids, and an obelisk, now fallen and broken, apparently similar to that at Heliopolis. Some have supposed that the canal and great reservoir of Fayoum were intended to serve another purpose,—namely, to draw off a part of the water of the Nile in seasons of abnormal rise, and thus to save the lower country from dangerous flooding. Whatever were the objects aimed at, the work was one of extraordinary magnitude.

Another great work was the canal from the Nile to the Bitter Lake and Suez, now in part repaired and used for supplying sweet water along the line of railway. Another canal connected the Mediterranean and the Red Sea; and another, made in the time of Rameses the Great, joined the Nile to the Lake Mareotis, running past Alexandria.

There is evidence that the course of the Nile itself, and the channels of some of its branches in the Delta, have been materially altered in past ages, partly by natural and partly by artificial means. The Canopic branch ran in ancient times close to the line of the present Mahmudiyeh Canal, which connects the Nile with Alexandria, but its channel is now dry. A more remarkable change in the main river has been observed in Nubia, near Semneh, about 25 miles above Wady Halfa, where there are temples and inscriptions of the twelfth and eighteenth dynasties. The Nile runs through a gorge between high cliffs which appear originally to have met, forming a rocky barrier, and damming the water so that it stood some 25 feet above its present level, and flooded a wide plain to the south and east. Here, in the now arid desert, are alluvial deposits similar to those of Egypt; and it may be that before the barrier was rent a branch flowed across the plain. This could only be ascertained by a careful survey.

History of the People.

As the physical geography of Egypt is unique, so is its history. The records inscribed on its temples and tombs, and written upon venerable papyri that have come down to us from remote ages, detail events which occurred 1,000 years or more before the time of Abraham. Accurate dates cannot be determined; we have not as yet sufficient data for a full and trustworthy chronology. But one thing is certain, that some of the extant written records of Egypt are long antecedent to the Pentateuch. And those records show that at that early period the Egyptians had attained to a very high degree of civilisation. Their learning was proverbial. In letters, art, sculpture, architecture, engineering, astronomy, mathematics, medicine, political science, mental and moral philosophy, they seem to have been the original educators of the world.

I cannot venture upon even a sketch of the general history of Egypt. An outline would be tedious and uninteresting, and details would take volumes. I propose, however, just to glance at a few salient points which touch upon important epochs in Bible history or the history of other great nations. I shall also mention a few facts of exceptional interest.

The Hebrew name of Egypt is *Mizraim*, and in Genesis (x. 6) we read that Mizraim was a son of Ham. This statement, however, must not, I think, be taken in a strictly ethnical sense, as if it meant that the Egyptians were all descendants of Ham. It probably only means that the country was at first occupied by, and got one of its names from, a Hamite colony, just as England took its name from the comparatively small colony of *Angli*. The physical type of the native Egyptian, as figured on the ancient monuments and seen in the modern peasantry, indicates a Japhetic rather than an Hamitic origin. It bears no resemblance to the Negro, and the people, from the earliest historic period, possessed a regularity of features and symmetry of form, and showed intellectual power and refinement, to which no section of Hamites ever approached. They were, and still are, in general, handsome and well formed, with oval face, bright, almond-shaped black eyes, straight nose, thick yet finely-moulded lips, broad shoulders, and upright firmly-knit limbs. Their colour is, and always was, a light richly-tinted bronze; some of the younger women are models of grace and beauty. On the very oldest monuments we often find the Egyptian and the Negro figured side by side, each with his characteristic features. Early Egyptian art is in this respect especially valuable. The sculptor did not possess the freedom and graphic power of the Greek, but he, nevertheless, delineated with singular accuracy and minuteness the features, form, and costume of each race and nation.

One point regarding the original settlement of the country has not yet been absolutely determined, and that is whether the first colonists entered by the Isthmus of Suez and ascended the Nile Valley; or whether, having crossed the Red Sea from some point in Arabia, they established themselves in the mountains of Abyssinia, and then gradually moved down to the more fertile and genial region of Egypt. Be this as it may, the temples, tombs, and grand monuments that stud the banks of the Nile show that, from the earliest historic period, a race of men remarkable for wealth, architectural skill, and artistic taste, occupied the entire valley. It is also clear that the most ancient monuments, the pyramids of Gizeh, the Sphinx, and the tombs of Sakkarah, are in Lower Egypt, and belong to what is known as the Old Empire; while the temples and pyramids of Gebel Barkel, which are, I believe, the most southern, are of the comparatively late age of Tirhakah (B.C. 700), who is called in the Bible "The King of Ethiopia" (2 Kings xix. 9). None of the monuments of Nubia appear to be older than the twelfth dynasty in the Middle Empire, which Egyptologists date not later than B.C. 2000; and the finest of those monuments, the rock-hewn temples of Abu Simbel, were constructed by Rameses the Great, of the nineteenth dynasty (*circa* B.C. 1400). It is noteworthy also that on the small temple of Abu Simbel, dedicated to the Goddess Athor, her name is followed by the hieroglyphic sign signifying "foreign land," thus affording monumental evidence that Nubia was outside the country of the early Egyptian monarchs.

The authentic annals of ancient Egypt are mainly derived from its own monuments and papyri. These have been wonderfully preserved. The dry climate has been the grand conservator; but another important factor in their preservation has been this, that many of the tombs and rock-hewn temples, which contain on their sculptured and inscribed walls, and in their sepulchral chambers, precious records, were shut up for ages by concealed doors, or by sand-drifts. It is only within the last quarter of a century that a vast number of the most important records have been exhumed; and I believe that many more still lie hid, to reward the researches of future explorers. In the British Museum, in Berlin and Turin, in the Louvre and in the Museum of Boulak, the Egyptologist can read for himself inscriptions on stone and records on papyrus, containing historic annals and incidents, and short literary, scientific, and religious treatises, of a period long anterior to the era of Greece or Rome. The ordinary reader may glean the leading facts from the works of Botta, Wilkinson, Rawlinson, Birch, Brugsch, Smith, Sayce, Lenormant, Mariette, Maspero, and others. The handy little volumes, "Records of the Past," published by Bagster, contain translations of a number of most interesting inscriptions and documents which give a general idea of the nature and value of the ancient literature of Egypt.

It is important to observe that from the earliest ages the learned Egyptians who erected the grand monuments, and developed by their engineering skill and enterprise the resources of the country, were as clearly distinguished from the nomads of Libya and Arabia, and from the black races of Nubia and Ethiopia, as are the modern fellahîn and citizens of Cairo and Damietta from the shepherds of the desert and the dusky warriors of the Soudan. They were distinct in physique, in lineage, in mental characteristics and occupations. They never amalgamated, or attempted to amalgamate, with the dark races. They were obliged, from time immemorial, to defend their fertile territory from the predatory inroads of those restless neighbours, while, at the same time, they traded with them, and obtained from the Ethiopians many of the most valuable products of Central Africa, just as the modern Egyptians did under the firm rule of Mehemed Ali, and may do again when a settled government is established in the country. The commerce from the upper tributaries of the Nile, and from the wide region of the Soudan, forms an essential factor in the prosperity and progress of Egypt. So long as the Soudan remains disturbed, just so long will Egypt be unsettled, and so long will its prosperity be retarded and its finances ruinously affected.

Earliest Records.

In a temple situated amid the ruins of Abydos, or Thinis, one of the largest cities of Upper Egypt, two remarkable tablets were discovered a few years ago—one containing the names of 130 deities, the traditional or mythical rulers of the country in pre-historic times; the other, the names of seventy-six kings, arranged in chronological order. The first name on the latter list is Menes, and the last Seti, who set up the tablet in the temple he erected, and dedicated to Osiris, the god of the dead. It is beautifully engraved and in perfect preservation. It is unquestionably among the most important historical tablets in the world. The time embraced is variously computed; some making it only 1,500 years, others as much as 3,500. A similar tablet was found at Sakkarah, having on it the names of fifty-eight kings, which correspond so far to the list given by the historian Manetho, and also largely to the Abydos tablet. On a papyrus roll now in Turin, but unfortunately much mutilated, is an apparently similar list. The date of Menes' reign is estimated by Mariette at B.C. 5004, by Bunsen at B.C. 3623, and by Wilkinson at B.C. 2700. Recent researches among monuments and papyri seem to indicate a far more remote antiquity for the early Egyptian dynasties than was formerly thought of. We have not yet sufficient data to enable us to frame a perfectly satisfactory chronology.

Menes, as I have stated, was founder of Memphis, the first capital of Lower Egypt. The great city is now obliterated. Its stones were largely used in the building of Cairo, and what remain on the site have been long since covered with the deposits of the Nile. Nothing is visible save a mutilated statue of Sesostris lying on its face in the bottom of a pit. It formerly stood in front of the Temple of Phtah, father of the gods of Egypt, and was 40 feet high. The name *Phtah* means Architect or Creator, and in one of the inscriptions on the Temple of Dendera he is called "The Lord of Truth, who created all things," thus apparently indicating that the primeval Egyptians believed in one Supreme God, the Creator.

The successors of Menes in the early dynasties were famed for their learning. One of them composed a treatise on medicine, portions of which are still extant. In fact, it seems that medicine in all its branches was studied and practised with no little success. Herodotus affirms that there was a specialist for every form of disease. Another of the early Pharaohs was celebrated for architectural skill. He built the oldest of the pyramids, Kochome of Sakkarah. It was a royal sepulchre, situated in the centre of the Necropolis of the Old Empire, from which, in recent years, have been exhumed many not only of the most ancient, but most important historical records. No less than eleven pyramids stand on the same rocky plateau, and around them are multitudes of rock-hewn tombs.

To me the object of greatest interest at Sakkarah was the Serapeum, a vast range of subterranean chambers in the sides of a tunnelled avenue, a quarter of a mile long. Each chamber contains a granite sarcophagus, 13 feet long, 11 feet high, and 7 feet 6 inches wide. Twenty-four remain in position, though all have long since been rifled. There are many other chambers of a similar kind in the rocky hill, but they are covered with drift-sand.

This remarkable Necropolis was discovered by Mariette in 1861. At the entrance overhead there was originally a temple, with avenues of sphinxes leading to it, and wide areas around adorned with statues and smaller temples. One would suppose that such magnificent tombs could only have been prepared for the most illustrious monarchs. Strange to say, however, they were the tombs of bulls—sacred animals which the people worshipped. When living, the Bull-god, *Apis*, was lodged in a palace, and worshipped in a grand temple in Memphis; when dead, his embalmed body was laid in state in the princely vaults of Sakkarah, and worshipped still in the temple overhead. In no other place does one get a view, at once so striking and so humiliating, of the splendour, the artistic taste, the religious absurdities, and the degrading superstition of ancient Egypt.

Some three centuries after Menes, a monarch of another dynasty ascended the throne, whose genius and power raised Egypt to a commanding place among the nations of the East. This was Kufu, better known as Cheops, founder of the great pyramid of Gizeh. The pyramid is the grandest sepulchre in the world. Its base is 746 feet square, and it was 450 feet high. The manner of construction was as follows:—A base was levelled on the platform of rock, just where the fertile Nile Valley borders the sandy desert of Libya. A chamber was excavated in the rock beneath the base, having a sloping passage leading down to it. The pyramid was then built, layer upon layer of large stones, until the apex was reached. In the centre, sepulchral chambers were constructed, communicating, with each other and with that below the base, by means of long and intricate passages. The chambers are lined with granite highly polished, and contain sarcophagi of the same material. Access to them is gained by an opening high up in the side of the pyramid, through which one passes into a long, dark, straight passage running down into the very heart of the monument. The exploration of those chambers was one of the most laborious tasks I ever undertook. The stones for the pyramid were brought from the hills on the opposite side of the Nile Valley, about ten miles distant; and it is said that 360,000 men were employed upon it for a period of twenty years. It is scarcely necessary to add that a work, so vast and so utterly useless, contributed largely to waste the energies and the resources of the country. Yet the mania for building pyramids increased, and more than one hundred of them dot the banks of the Nile.

The labours of Cheops were not confined to the great pyramid. He worked the mines of Wady Meghara, in the peninsula of Sinai, where his name appears carved upon the rock, and was, doubtless, seen by the Israelites in their wilderness journey. The rock-hewn sepulchres around the great pyramid were at least commenced in his time; and perhaps he may have been the designer of the Sphinx. Art and science flourished during his reign. An ancient inscription records the presentation by him of costly offerings to the gods, "images of stone, gold, bronze, ivory, and ebony." The carvings and paintings in the tombs at Gizeh represent with wonderful skill and precision the features, costume, employments, and amusements of the people, from the prince to the peasant. One sees there the baker, butcher, cook, tailor, goldsmith, glass-blower, potter, shepherd, ploughman, brickmaker, reaper; and also harpers, singers, dancers, acrobats, story-tellers, and a host of others. The accuracy of the sketches and the amount of light they throw upon the manners and customs of the ancient Egyptians are wonderful. While wandering among those primeval monuments, and exploring those tombs, one almost seems to be mixing familiarly with the men and women who lived from five to six thousand years ago. Long before the age of Abraham, before any contact with the people of Ur of the Chaldees, Abraham's ancestors, the Egyptians had advanced in civilisation, and in the arts and sciences, to a degree far exceeding that of any other nation. The grand temples of Thebes and Abu Simbel, the colossal monuments in every part of the country, the great canals, the gorgeous tombs, all proclaim the former glory of Egypt; and not the least remarkable characteristic of the monuments is that they tell us and show us how everything was done. We see figured on the walls how they built; how they hewed colossal stones from the quarries and conveyed them to their appointed places; how they attacked and captured fortresses; how they treated captives; and how they used their slaves. I shall just select one or two of the more striking examples of their genius.

Origin of Alphabetic Writing.

The origin of our alphabet is one of the most interesting and instructive studies. It has of late been pursued with vast research and great success by Dr. Isaac Taylor. He has shown that the alphabets of Europe, Africa, and Western Asia have a common parentage; and, strange as it may seem, he has traced them back stage by stage to those hieroglyphics which one sees on the earliest monuments of Egypt. Like the different races of mankind, the alphabets have evolved from one primeval source. Whether this is to be taken as an additional proof of the unity of the human race, I do not stop to inquire. I simply state it here as a fact—the result of independent research.

In ancient Egypt there were two distinct methods of writing: the one hieroglyphic, or pictorial; the other hieratic, or alphabetical. In the former, all the forms used are, or were intended to be, pictures of the objects they represent. There are men, women, beasts, birds, reptiles, insects, human hands, eyes, and suchlike; there are also circles, squares, crescents, curved lines, &c. All these are pictures, and the whole writing they make up is a narrative picture. This was probably the most ancient mode of writing. From it the alphabetic writing sprang. Every letter had, so to speak, its germ in a picture or ideogram; and "those pictures were gradually assumed as the representatives of words, and finally became the symbols of more or less elementary sounds," that is, of letters. Dr. Taylor has described the origin of alphabetic writing in a single terse sentence: It began, he says, "with ideograms, which afterwards developed into phonograms." This development is illustrated in the early records of Egypt, where we find the two systems subsisting side by side; and in some cases, as in the Rosetta Stone, the same inscription is written in both forms.

The date of the transition from the hieroglyphic to the hieratic is unknown. It was antecedent to the historic age. It is a remarkable fact, which, perhaps more even than her grand monuments, shows the advanced civilisation of Egypt at a remote period, that we possess a papyrus hieratic manuscript written during the eleventh dynasty, which is a copy of a treatise "composed by Prince Ptah-Hotep, who lived during the reign of Assa, a king of the fifth dynasty." The manuscript was found by M. Prisse in 1847, in a tomb of the eleventh dynasty, and is thus older by many centuries than the time of Moses,—older probably than the date usually assigned to Abraham,—while the work itself must be regarded as the most ancient of all existing books. Yet in this manuscript we have a perfect alphabet, in which are the prototypes of the Semetic, and all alphabets derived from it,—Phœnician, Greek, Hebrew, Coptic, Arabic, Roman.

The subject-matter of the manuscript also proves that in that remote age the Egyptians were as far advanced in the refinements of literary composition, and in the fundamental principles of ethics, as they were in the mechanical art of writing with pen and ink. The author of the now famous papyrus-Prisse was an aged sage, who desired to give to the world the moral results of long experience and deep thought. He thus writes:—"With the courage which knowledge imparts discuss with the ignorant as with the learned. Good words shine more than the emerald which the slave finds among the pebbles." Again, we have an injunction to filial duty which strikingly reminds one of the fifth commandment:—"The obedience of a good son is a blessing; the obedient walks in his obedience. The son who accepts the words of his father will grow old on account of it. Obedience is of God; disobedience is hateful to God. The heart is the teacher of man in obedience and disobedience; but man gives life to his heart by obedience." Then he adds:—"Good for a man is the discipline of his father . . . . . a good son is the gift of God. It is thus I obtain for you health of body and the favour of the king."

The sublime sentences of the Proverbs of Solomon scarcely surpass those maxims of the Egyptian sage. Yet the words were written probably a thousand years before Moses; and they formed, at that time, a code of ethics in the very school in which Moses was subsequently trained.

On, or Heliopolis, and its Obelisks.

The founding of the sacred City of On, and the establishment there of the Temple of the Sun, with its large staff of learned priests, form a noteworthy epoch in Egyptian history.

The exact date is unknown, but it must have been considerably before the twelfth dynasty, when Osirtasen, the first monarch of that dynasty, set up the obelisk that still stands on the site. *On* is said to be a form of the Egyptian *Ana,* one of the names of the sun-god, usually called *Ra,* whose chief place of worship was in the city. Hence its Hebrew name *Beth-Shemesh* (Jer. xliii. 13), "House of the Sun," and the Greek form, *Heliopolis,* "City of the Sun." The oldest and finest of Egyptian obelisks is that still standing on the site. It was erected, with another exactly similar, at the entrance to the Temple of the Sun, and on it is engraved the name of its founder, Osirtasen I., who lived not later than B.C. 2000; Mariette assigns a date 1,000 years earlier. Be this as it may, the obelisk was there when Abraham visited Egypt; it was there when Joseph ruled the country and married the daughter of Poti-Pherah, priest of On; it was there when Moses studied in the school of philosophy in the Temple, and became learned in all the wisdom of the Egyptians; it was there when Plato, as we are told, studied in the same school; it was there when the infant Jesus was brought down to Egypt in the arms of His mother; it is there still, its tapering shaft rising up all solitary on the long-deserted site.

About five hundred years after Osirtasen two other obelisks were erected in front of the Temple by Thothmes III., one of the most famous monarchs of the eighteenth dynasty. They both bear the names of their founder, and also of two of his successors, Rameses II. and Seti II. Their history is a romance. They were removed to Alexandria by the Romans, and placed in front of the Temple of Cæsar. The Temple disappeared, but they remained. In process of time one fell. I saw them thus on my first visit to Alexandria. The fallen obelisk was given by Mehemed Ali to the English nation in 1819. Its subsequent story is well known,—how a special ship was built for it by the munificence of Erasmus Wilson, how it was cast adrift in the Bay of Biscay, how it was recovered and brought to England, and how it now stands on the Thames Embankment. Its companion was given to the United States of America, and forms one of the chief ornaments of the Public Park, New York.

These are not the only obelisks of which Egypt has been robbed. One which formerly stood before the great temple of Luxor is now in the Place de la Concorde, Paris; another of Thothmes III., from Thebes, adorns the grand area of the Lateran in Rome; another, also from Thebes, is in the Meidan of Constantinople. One cannot but lament the removal of those unique monuments from the country where they were designed; but their existence in far distant and widely separated lands is not without advantage to the philologist and antiquarian. He can trace upon the hieroglyphics which cover them the original germs, so to speak, of those letters that now give expression with such marvellous precision and facility to the literature of the whole civilised world. Many of them still fortunately remain in Egypt. There is one, a companion apparently to that of Heliopolis, in the Fayoum, but fallen and broken. There are several in Thebes; there are some broken and prostrate on the site of the ancient Tanis in the Delta; and there is one unfinished, lying in a granite quarry near Syene.

Connexion of Egypt with Sacred History.

It would seem to have been soon after the close of the twelfth dynasty that Abraham visited Egypt. About a century later a new race of shepherd warriors, called *Hyksos*, apparently of Semitic origin, invaded and captured the country. They established the seat of their government in Memphis, but their conquests did not extend to Upper Egypt, of which Thebes was then the capital. During their rule Joseph was sold by his brethren and brought to the Egyptian court. It was quite characteristic of the strange transition of life and authority in the East that the slave became viceroy, and introduced his brethren to Pharaoh. The influence he gained, and the position to which the Israelites attained were, doubtless, in part owing to the fact that the then rulers of the country were Shemites and natives of Arabia.

Subsequently the Hyksos were conquered and expelled by Amosis, the founder of the eighteenth, which was a Theban dynasty. This dynasty inaugurated one of the most brilliant periods of Egyptian history. To them we owe most of the magnificent temples, monuments, and tombs that line the banks of the Nile, from Memphis southward. Records of their conquests, and of the glory of their country, are inscribed on the walls of Karnac, Luxor, Medinet Habou, Abu Simbel, and other places. Their conquests extended to the Euphrates, over Syria, Asia Minor, the Isles of Greece, and away down into Ethiopia on the south. They excelled in literature, science, art, engineering, and architecture; and they have left behind them, on the walls of their temples and tombs, and on numerous papyrus rolls, many hundreds of which are now in the museums of Europe, most valuable records of their achievements. One of the monarchs of this dynasty was, doubtless, that new king who knew not Joseph, and who reduced the Israelites to hard and cruel servitude. On the monuments of the period we find graphic representations of brickmakers, with marked Jewish features, working under the lash of taskmasters.

Recent Researches and Discoveries.

The researches that are now being made at Tanis and other places in the Delta by the Egyptian Exploration Society I have not time even to glance at. They have been pretty fully described in the periodical press. But there is one most remarkable discovery of recent years which I must not overlook; it is that of

Deir el-Bahry.

In the wild ravine of Deir el-Bahry, near Thebes, a cave was found some years ago by shepherds, who are always searching after antiquities. They kept their secret for a time, gradually drew forth from the cave long-hidden treasures, and found a ready market for them among travellers. At length the attention of the directors of the Boulak Museum was attracted; the secret was discovered, and the cave visited by Brugsch. He found there a vast horde of mummies of kings, queens, and high dignitaries, who flourished from the time of Joseph down to the capture of Jerusalem by Shishak. The secret of the cave was this. On the decline of Thebes, the inhabitants being poor, bands were organised to break open and plunder the royal tombs, so numerous around the great city, and so rich in concealed treasures. Some pious patriot, disapproving of those sacrilegious acts, collected a number of the most precious contents of tombs still intact, and stowed them away secretly in this obscure cave. There they remained until found in some chance way by the shepherds.

I have only time to mention a very few of the most remarkable mummies, all of which are now in the Boulak Museum. I get my information mainly from the monograph of Maspero, published at Cairo in 1881, and illustrated with twenty photographs by Brugsch.

One of the first is Ahmes I., a monarch of the eighteenth dynasty. He expelled the Hyksos from their last strongholds in the Delta. His name and titles are written in ink on the linen folds of the mummy. The coffin of his queen was also found, and her embalmed body is enveloped in crimson cloth, bound with folds of fine linen.

Another is Amenhotop, the founder of Karnac. On his face is a wooden mask painted, and probably a portrait of the monarch. The coffin of Thothmes I. was found; but his body had been removed, and in its place was the mummy of Pinotem, a contemporary of Solomon. We have also the coffin of Thothmes II. The folds of linen which encircle his mummy have written upon them long extracts from "The Book of the Dead" and "Litanies of the Sun."

But the most interesting of the mummies discovered is that of Rameses the Great, the Sesostris of the Greeks, and the Pharaoh at whose court Moses was educated. It is perfect, with the name of the monarch written in hieratic characters on the breast.

In addition to some forty coffins and mummies the cave contained about 6,000 other objects,—ornaments of gold and silver, gems, vases of bronze and terra cotta, goblets, statuettes, toilette requisites, and wearing-apparel for ladies, papyrus rolls, and a unique example of a funeral tent or pall used at the burial of Queen Isis. Of the latter there is a full description, with coloured plates, in Mr. Villiers Stuart's most interesting work.

All these relics give reality to the primeval history of Egypt. They show, too, the vast importance of the antiquarian treasures so wonderfully preserved in its tombs, and they serve to fill us with a greater desire to know more of that wonderful country.

THE EARL OF BELMORE.—Having been called upon by Sir Henry Barkly, I have much pleasure in moving the following resolution:—"That our best thanks be presented to President Porter for the Annual Address now delivered, and to those who have read papers during the session." I came here to-night simply as a casual visitor, for I am not a member of the Victoria Institute; but I confess that when I received the invitation to be present on this occasion, I was attracted partly by the fact that my friend, if he will allow me to call him so, and my former colleague on the Irish Education Board, Dr. Porter, was to deliver the Annual Address, and partly also by the nature of the subject with which he proposed to deal, namely, Egypt. Egyptian antiquities have always had a peculiar fascination for me, and this fascination has not been diminished by my having on several occasions been called upon to visit that country. On one occasion, a great many years ago, I went up the Nile as far as Thebes, and four and a half years ago I paid a short visit to Cairo, on which occasion I went to the Museums at Sakkarah and Boulak, which have been referred to this evening. But at this late hour I will not occupy the time of the meeting, but will merely move the resolution that has been placed in my hands. (Applause.)

The Right Hon. A. S. Ayrton.—I have much pleasure in seconding the vote of thanks, and I have no doubt I am correctly expressing the feeling of those who have listened to the Address delivered this evening, when I say, it is a most succinct and lucid statement, on a very broad basis, of a wide and comprehensive subject, which has been presented to us, in a graphic form, and almost brings in review the whole condition of Egypt from the beginning of history to the present day, producing a greater impression on our minds than if we were to travel through some of those ponderous works which have been written to illustrate in detail all that has happened up to modern times. Although it is some years since I have been in Egypt and travelled up the Nile, I can fully appreciate the value of the Address.

The motion was unanimously agreed to.

Dr. Porter.—I beg to return you my best thanks.

Mr. H. Cadman Jones.—I have to move that the thanks of this meeting be presented to Sir Henry Barkly, for having so kindly, at a very short notice, taken the chair, in the absence of our valued President, the Earl of Shaftesbury, whose absence through illness we all regret. As this is a motion requiring no speech in its support, I shall therefore content myself with having put it before you.

Mr. J. F. France, F.S.A.—I have very great pleasure in seconding the resolution.

The resolution was carried by acclamation.

The Chairman.—This is not the first occasion on which I have occupied the chair at a meeting of this kind, upon a moment's notice; and I have only to say that, however poor a substitute I may have proved for our venerated and venerable President, Lord Shaftesbury, you will, nevertheless, be disposed to accept the small service I have been called upon to render on the plea that I have been enabled to free our President from a task to which he has felt himself unequal. (Applause.)

The members, associates, and their friends then adjourned to the Museum, where refreshments were served.

ORDINARY MEETING, MAY 4, 1885.

THE REV. R. W. KENNION, M.A., IN THE CHAIR.

The Minutes of the last Meeting were read and confirmed.

ON THE THEORY OF NATURAL SELECTION AND THE THEORY OF DESIGN. By PROFESSOR DUNS, D.D., F.R.S.E., New College, Edinburgh, President of the Royal Physical Society, Edin., Corresponding Member of the Academy of Sciences, Philadelphia, &c.

"THE first rule which the exact investigator of Nature should observe is, that he should not allow himself to pronounce an opinion, either in affirmation or denial, upon subjects which do not fall within the sphere of his observation or experience. . . . . The second rule is, that he must not pass any opinion, form any judgment, nor utter it, upon matters of any science to the present level of which he has not brought himself." The words, which are Schleiden's, occur in a tract, published at Leipsic in 1863, on the Materialism of the Recent German Scientific School (*Ueber den Materialismus der Neueren Deutschen Natur-Wissenschaft*). They are worth remembering when discussing the subject of this paper, in regard to which the controversy is not as to facts, but as to the interpretation of facts. We wish also to bear in mind that to speculate where we cannot give proof is far easier than to believe where we cannot understand.

Since Mr. Darwin's death we are in a position more favourable than before to form a just estimate of the nature, scientific value, and physico-theological scope of his work. The influence of his living presence on the minds of his followers unfitted them for dealing impartially either with his own merits or with the merits of his opponents. Even those who hold that Darwin's special gifts were not those of a philosopher will join heartily with his most enthusiastic admirers when they claim for him the very highest place among naturalists. But, apart altogether from his unrivalled skill as an observer, and looking at his speculations alone, we see that he has so welded observation and speculation into one strong force, so marshalled all the branches of his varied knowledge to the line of one grand argument, as, in the belief of many, to have made good for his leading hypothesis the weight and authority of an established law. And, thus regarded, it is held to have superseded the principle of final causes (*principe des causes finales,* Cuvier) as a guide in biological study, and to have shown that there are no logical points of contact between natural science and natural religion. It will simplify the state of the question to have before us the old and the new points of view.

"If we select any object from the whole extent of animated nature, and contemplate it fully and in all its bearings, we shall certainly come to the conclusion that there is design in the mechanical construction, benevolence in the endowment of the living properties, and that good, on the whole, is the result" (*The Hand,* chap. i. By Sir Charles Bell). "There cannot be design without a designer, contrivance without a contriver, order without thought" (*Natural Theology,* chap. ii. 3. Paley). "We set out with assuming the separate existence of our own mind independently of matter; without that we never could conclude that superior intelligence existed or acted. The belief that mind exists is essential to the whole argument by which we infer that the Deity exists. This belief we have shown to be perfectly well grounded. It is the foundation of natural theology in all its branches" (*Discourse on Natural Theology,* section iii. By Lord Brougham). "Every organised being forms a whole, a single circumscribed system, the parts of which mutually correspond and concur to the same definite action and re-action. None of those parts can change without the others also changing, and, consequently, each part, taken separately, indicates and gives all the others" (*Ossemens Fossiles.* Cuvier).

These quotations indicate the chief points in the argument from design. The extract from Lord Brougham gives the testimony of consciousness a place within it, and that from Cuvier suggests the nature and scope of the law of correlation of animal structure and form first enunciated by him. The testimony of consciousness to the dependence of intelligent action on will, and to will as an attribute of personality, is as trustworthy as the testimony of sight to the fitness between the bill and the talons of the birds of prey and their habits. Nor is the significance of the testimony weakened by linking with it the intuition of God, because this intuition is as much a fact of man's nature as any bodily appetite is. Moreover, according to Cuvier's great law, each organ, or part of an organ, gives the whole organism; so that from the fragment of a bone the entire animal, in its essential features, may be represented. This discovery created a new science,—palæontology. There had been descriptions of fossil remains previously; but he re-constructed, from mere fragments of structure, long extinct forms, and showed what had been their very manner of life. And what was his guide? The recognition of design,—of contrivance,—in the reciprocal relations and mutual dependence of the parts of an organism and the whole, and also between the organs of an animal and its habits of life. In no imaginable circumstances could the use of the theory of natural selection have rendered this service to science.

The leading features of the new point of view are belief in teleology, and denial of final cause,—the recognition of adaptations in nature and the refusal to ascribe them to intention. They are the outcome of the action of an impersonal factor,—natural selection,—a force the concentrated form of innumerable purely physical influences. The work assigned to it is thus described:—"Natural selection is daily and hourly scrutinising, throughout the world, every variation, even the slightest; rejecting that which is bad, preserving and adding up all that is good; silently and insensibly working, whenever and wherever opportunity offers, at the improvement of each organic being in relation to its organic and inorganic conditions of life" (Darwin). It watches over tendencies to variation in order to use deteriorating elements for the destruction of species, and improving elements for their perpetuation. Somehow an imaginary something is everywhere actively realising results hitherto traced to the presence and potency of creative inworking.

The two views referred to above may now be brought into closer contrast. According to that just noticed there is nothing fixed either in the structure or the relations of organisms. Tendency to change is inherent. It influences the elements of organisms, the compound substance of organisms, the mature organisms themselves, the countless adaptations between different but inter-dependent parts of animal structure, between the organs of animals and their habits, and also between individual forms and their environments. An unresting metabolism pervades all animated being. There is nothing stable, nothing sure. Biological data warrant a doctrine of teleology, changeful, however, as the data themselves, and this is held to supersede the hitherto widely-accepted doctrine of design. According to the other view, the tendency to vary is recognised, but it can work only within sharply-defined limits. It can influence specific features, but we have no proof that it has ever obliterated them, either by the action of incident external forces or by inherent energy of any sort. On the contrary, it can be shown that the facts both of palæontology and of the life history of recent forms make this in the highest degree improbable. It is granted by all that the adaptive principle may find as full expression in the growth stages of an animal as in the adjustment and subordination of organs among themselves, or in their relations to the functions for which they exist. Now, avoiding the term "species," and using "individual" instead, the persistence of a zoological class depends on the continuance of identical grooves for the development and succession of the individuals which make it up. This is implied in the reproduction of distinct individuals. But there is not only a definitely-characterised starting-point; there is also development along lines which every palæontologist knows have not changed throughout great ages. Students of recent crustacea acknowledge their indebtedness to palæontology for help in making out the immature stages of the king crabs (*Limulus*) and other genera. Barrande has shown that one trilobite of lower Silurian age (*Trinucleus ornatus*) passed through six stages from egg to maturity; another (*Sao hirsuta*) seventeen; and another (*Arethusina koninki*) twenty-two. We have thus (1) proof of the existence in earliest Silurian time of a group of crustaceans as high in structural rank as their present representatives, and whose embryonic development corresponded with theirs; (2) we have evidence that the metabolism with which present allied forms are credited does not so influence them as to alter the grooves within which development takes place. It is inconceivable that, necessarily, random natural selection could ever have determined these stages of growth, or have brought about and rendered persistent the complex series of fitnesses associated with them; the more so that the Darwinian condition of time for all this was awanting. The lower Silurian *trilobites* suddenly appear in the geological record as suddenly as the *cephalopoda* which came later, and which stand very much in this respect in relation to other mollusca as the trilobites do to other crustacea.

Facts in the life history of recent forms are equally suggestive. We take the molecule as the ultimate unit of vitalised substance, and the cell as the expression of aggregate molecules, and we follow the action of the differentiating force in the living animal form till we see the mature organism. In its upward working, say from molecule to man, it has utilised diverse, equally with identical, elements in order to identical results. Is there any adequate explanation of this outside of the recognition of intelligent guidance—forethought—somewhere, anticipating a definite organism and foresight in providing the means to its realisation and succession? And, in view of all this, tendencies to variation of every sort have been overcome and limited to secure, we might say, permanence of species, but we say only persistence of individuality, that we may recognise the element of unlikeness ever characteristic of this. Because, be the guidance what it may, it does not determine perfect resemblance either among the embryonic stages of an organism or among mature forms of the same species. "Advanced Darwinians," said Agassiz, "are reluctant to acknowledge the intervention of an intellectual power in the diversity which obtains in nature, under the plea that such an admission implies distinct creative acts for every species. What of it if it were true? Have those who have objected to repeated acts of creation ever considered that no progress can be made in knowledge without repeated acts of thinking? And what are thoughts but specific acts of the mind? Why should it, then, be unscientific to infer that the facts of nature are the result of a similar process, since there is no evidence of any others?" (Agassiz, in *Atlantic Monthly*, January, 1874, p. 101.)

If the plea for natural selection as against the theory of design were likely to find illustrative instances in any one biological department more than another, we might expect them among the *protozoa*, in which the plasticity of the life substance is most intense, and the mature forms most open to influences, internal and external, towards variation,—a department in which natural selection might be presumed to have widest and freest scope. Yet it is not so.

To affirm that the highest animal holds something in which the lowest can have no part is self-evident; but to affirm that the lowest holds what it cannot share with the highest is not. The element in the foraminifer which determines pattern separates it, not only from forms high in the zoologic scale, but also from the low forms next to it. And the adaptive principle reigns here, because one side of specific rank includes what an animal holds of matter disposed in it as in no other; and another side, what it holds of vital force under the same limitation; and yet another, what it holds of psychical quality regarded from the same point of view. These are the features which the theoretical factor is said to influence, to modify, to change, and to re-dispose, in order to new forms altogether. Does it succeed? Has it ever in the knowledge of science succeeded? Perhaps the following brief notes on *Difflugia proteïformis* (Ehrbg.) may indicate the direction of the answer to these questions. This species belongs to the *Lobosa,* the simplest sub-order of *Rhizopoda,* and consists of two layers, a gelatinous granular endoplasm and a pseudo-membraneous exoplasm, with flattened pseudopodia. It is not the lowest of the group. *Protamœba* (Haek.), *Amœba* (Ehrbg.), and *Arcella* (Ehrbg.) represent the forms which lead up to it, but they are distinct from it. *Difflugia* is referred to because it illustrates in a striking way the limitation of the energetic metabolism characteristic of this group. Though the embryonic type developes in the direction of *proteïformis* and reaches its mature state, it is not limited to this groove. It may pass through stages of growth each of which ends in a mature form, very unlike *proteïformis,* yet in reproduction they return to its embryonic type, while, as sub-species, they have well-marked habits of their own, and differ in two important respects,—selective capacity as to food, and adaptive capacity as to covering. *Difflugia lageniformis,* for example, covers itself with minute bits of mica, or other thin, glistening mineral, with an exactness which scarcely leaves the least vacant space between them, and even, in many instances, seeming to fit broken edge into broken edge. It is hard to find words suited to the phenomena of shape and of habit, because the ordinary terms,—skill, selective instinct, discrimination, choice of material, and the like,—are apt to convey meanings which imply more than the phenomena. In the development, succession, definite individuality, and characteristic covering of the sub-species, we have features ever recurring in orderly sequence throughout their generations; and all this points to a repetition of adaptations, so many and so nice, that to ascribe them to mere unguided influence is to fail in our duty as observers, to whom the thoughts which underlie things should always be more important than the things themselves.

We have sought in vain for proofs of the influence of natural selection in realising the fitnesses between the parts of organisms, in departments in which everything might be held likely to encourage its action. But the adaptations which have been most frequently referred to, both by the biologist and the student of the religion of nature, as evidences of intelligence, occur in the higher ranks of animals. The field is unusually rich, and has been but little worked, notwithstanding the literature which has gathered round it. Observation has been mainly devoted to the consideration of the relations between organs and parts of organs, or between structure and habits. Less has been made of the modifications of organs in connexion with, or in order to, the same function. Take, for example any one of the parts of the labyrinth of the ear, as, say, the *cochlea*. In monotremes this is half a coil; in ruminants, two and a half coils; in carnivora, three coils; and, in rodents, four coils. In approaching facts like these, the advocates of natural selection as an adaptive factor, take refuge in an appeal to the geological record, presumably on the ground that this would give ample time for the action of the differentiating force. But the appeal is one-sided and partial. In the study of geology, "no powers," said Hutton, "are to be employed that are not natural to the globe; no actions are to be admitted except those of which we know the principle." The agencies of which present phenomena are the expression supply the key to the phenomena of the past. "Organisms have arisen by insensible steps, through actions which we see habitually going on" (Spencer). No worker will quarrel with the principle referred to in these quotations, because its recognition does not imply that no causes are operative except physical. But the bearings of the principle are much wider than those who so often refer to it are willing to admit. It includes the facts of the present as well as its forces. And it is a fact beyond question that we have no proof in the present that natural selection has originated one species, or realised, unguided, one series of adaptations, or even one instance of continued adaptation. The facts of the present thus become as "the lantern in the stern; they shed light on the waves behind." If the great ages of human history supply not one reliable instance of transformism, or of new natural adaptations become permanent, we are entitled, in accepting the principle now before us, to ask that these facts shall have due weight when we deal with the past. We attach no weight to variations brought about by man's intervention, because in all its aspects it points to forethought and foresight, and thus gives the active intelligence for which, in natural fitnesses, we are pleading.

The introduction of the doctrine of special creation into the question of the bearings of natural selection on the theory of design has hampered the discussion a good deal. That there are relations of a very close kind between them is seen at once, because the advocates of either appeal to identical phenomena in support of them. But we must remember that the question is not that of the origin of specific forms, but of structural and physiological fitnesses in individual forms, in their relations to other and different forms and in their environments. Of course, the discussion can never be exhaustive till the question of origin has been determined. But in our present contention this is not needed. Besides, the doctrine of special creation is associated with facts which reach into a region where induction is supplemented, not superseded and not contradicted, by faith. Moreover, there is no necessary connexion between the theory of design and the doctrine of the independent creation of species. It is conceivable, though we think the testimony of science is against the notion, that the creative starting-point, recognised by Darwin, might be held potential in all after differentiations, and might warrant the deduction of a wide and richly-varied teleology as the outcome of the original creative act. We might thus relegate the idea of design to fitnesses intended, at an inconceivably remote period of the world's history, to be gradually realised in the upbuilding of the earth and in the steps of the upward march of life-manifestation. But this would not be natural selection. It would be a theory of species and of fitnesses in them and among them, by creative pre-ordination without guidance of the means thereto, though these imply diversity of collocations, complex conditions, intricate and nice adjustments otherwise inexplicable. It may be urged that the forces necessary to all this are dominated by a law itself equal to the guidance asked for,—the law of continuity. This raises questions as to the extent of the operation of this law, the points at which the essentially-different natural and spiritual worlds meet; miracles, resurrection, and even incarnation, none of which can be looked at here. Those who point to natural selection as a substitute for the theory of design, no doubt, plead that, apart altogether from such questions, it gives three instances of teleology in connexion with every animal form,—one between inherent tendency to change, and the ready response of the organism to this; a second between organisms and their surroundings; and a third between organs and their characteristic functions. The facts are acknowledged. What we wish to have is some proof that teleological relations like these are possible without the intervention and guidance of intelligence and will. It is granted by all, that varied and complex forces must have been active in the origination of germs; that the metabolism natural to vitalised substance is limited; that divergences take place among identical germs in identical environments; and that differentiations which are determined in growth, and which give varieties temporary or permanent, have never, to the knowledge of science, within the present epoch resulted in transformism. But to credit all this to "natural selection," or to the notion of "unconscious ends," or to the theory of "conditions of existence," is not flattering either to science or to common sense.

There are other aspects of this question well deserving careful notice. As, for example, the allegation, that to let species with all the fitnesses which accompany them drop out of existence, and to introduce others closely related to them, would be a great waste of power. But can there be waste of power when the agent is omnipotent? There is also the common attempt to discredit the principle of design by holding it responsible for effects incidental to its action. Is the dust raised by the rapid rotation of the wheels of the express train a proof of blundering on the part of the mechanical engineer who designed them? Both topics admit of wide discussion; but, without touching on them further, we conclude with a re-statement of our leading positions in the following paragraphs:—

1. In observing phenomena and in registering facts the desire to interpret them is natural and fundamental. We are in the lines of true scientific work, both when we ask what is their meaning and when we try to find it. We might look long at an isolated fact, if we could find one, without even seeming to leave science for philosophy. But there are no isolated facts in nature. Relational dependencies meet us everywhere, and it lies as much with science as with philosophy to take this into account and to explain it. Now, if we find in the relations of organisms to one another and to their environments, or even in the inter-dependence of the parts of organisms, order and adaptations suggestive of corresponding features resulting from human skill, it would not be philosophical to resist the impression, that the natural fitnesses *may* be as truly the products of thought or the outcome of

taking thought as are the simplest equally with the most complex fruits of our own skill. And thus:—

2. The theistic argument from adaptations includes the conditions of consciousness as well as the phenomena of nature. Man's knowledge of himself is by introspection, his knowledge of other men and of nature is by observation. Within this wide department we find materials for the scientific discussion both of anthropomorphism and agnosticism. The vindication of the former lies in the nature of man's origin, which implies power to recognise creative wisdom in the constitution of the external world. The reproach of the latter is that, though religion lies outside of science, there are yet points of logical contact where natural theology finds a footing,—points at which the "things that are made" bring "the invisible things" within the sphere of consciousness, and the facts of consciousness are as real and true as those of the things that are made. We thus acknowledge intelligent efficient cause as originating being, and, through second causes, realising fitnesses, subordinating all to purpose, and providing for continuance. But there is will also, and this is seen in periodic intervention; not, however, for the purpose of preserving sequences, because this is secured by the action of natural laws, but for the inaugurating of new starting-points in the upward march of creative self-manifestation, or for moral purposes, as in the introduction of the present epoch.

3. The phenomena now referred to are recognised by the advocates of the anti-theistic scheme. They attach a teleological value to them, but deny that they are fruits of design, and ascribe them to physical, impersonal influences generalised in the term natural selection,—a factor dependent on the concurrent action of agencies arising in the over-increase of organisms and in an innate tendency to structural change. It is not forgotten that some who credit natural selection with these powers are willing to admit the theory of a creative starting-point millions of ages, if not millions of cycles of ages, ago, but they refuse to acknowledge the imminence of intelligence at any after-point. Otto Schmidt, Haeckel, and others, think that Darwin's reference to a Creator is the weakest part of his system. There are others, again, who, like Asa Gray, accepting his system and working for its illustration, yet hold that it is not inconsistent with theism. It is doubtful, however, if this view be of any real value, either to science or religion.

4. While there are close relations between the argument from design and the doctrine of special creation, and while

the former might be held to be incomplete until the question of origin is determined, we should remember that they are not inter-dependent, and that the doctrine reaches into a department where scientific induction must be supplemented by faith.

5. The claims recently urged in behalf of the theory of natural selection as a substitute for the theory of design are not admissible, because it fails to give a satisfactory explanation of the differences among closely-related organisms, of the gradation and succession of organisms, of the complex phenomena of organs and functions and especially of sex, of the laws and the limits of variation, of the law of reversion to type, or of the numberless adaptations implied in all these. Whereas all such fall into order and significance when traced to active intelligence both as to origin and guidance.

THE CHAIRMAN (the Rev. R. W. Kennion, M.A.).—I am sure all will accord the author their best thanks for his paper, and add a further expression of their thanks to Mr. James for having so kindly read it.

Mr. W. P. JAMES, F.L.S.—I have read Professor Duns' paper with great pleasure, and need hardly say that I cordially agree with its main conclusions. It is, I am afraid, too condensed in parts to be readily understood by a popular audience. Only those who are accustomed to biological studies can here and there follow the course of reasoning, which is sometimes more hinted at than developed. There is one small point on which I should like to offer a criticism. I should be inclined to give the "Theory of Design" a much wider scope than is indicated on the second and third pages of the paper. In fact, Professor Duns has very much narrowed its application by opposing it to the theory of Natural Selection, and so confining it to animals and plants. But the theory of design, or, as it is more usually stated, the argument from design, covers a great deal more ground than natural selection. Nor, again, is it wise to limit it to purpose; it should be enlarged so as to include order as well as purpose; so as, in fact, to be equivalent to intelligence. Order is often to be traced where we cannot venture to guess at purpose. Let us take the familiar and, as it were, classical example of phenomena the purpose of which has baffled the human intellect, namely, comets. Yet order is most manifest in the fact that they obey with undeviating regularity some law of motion which drives them round the sun in conic sections, either in elongated ellipses, or parabolas, or hyperbolas. Order, again, is seen in the geometrical regularity of crystals, of which the snow-crystal, with its six rays diverging at an angle of 60 deg., is a familiar example; in the arithmetical constancy of the formulæ by which chemical combinations can be expressed, in the circulation of water, in the distribution of light and heat—in fact, in all the great physical features of our planet. Even in the animal and vegetable kingdoms, where purpose is generally very obvious, order also is present. Let us look at the tulips which are now adorning the beds of our public parks. Purpose is visible in every detail of the flower—perianth, stamens, and pistil; but there is order also—there is the adherence to the number three, or the ternal symmetry. The flower consists really of five whorls of three each; two of the perianth, two of the stamens, and one of the carpels. This adherence to type leads us into a different sphere of thought from purpose; and it is found side by side with purpose in every one of the animals and plants of the globe, with the exception of the very lowest in the scale. The fact is, the subject of design in nature is a vast one, and I agree with Professor Duns, that it has not yet been adequately treated. Of the unfairness of the objections made against it I find frequent examples when reading recent German monographs on botanical subjects. I will mention a single typical example of one-sided fanaticism. The late Dr. Hermann Müller, of Lippstadt, was justly famous for his patient and exhaustive study of the wonderful mutual adaptations between insects and flowers. The work of his which I have myself read is a *résumé* of the whole subject written by him as the opening essay for Schenk's *Handbuch der Botanik*, now appearing in Breslau. In this able work he gives most interesting facts mixed up with wild speculations and buoyant hypotheses. The fundamental point of view is perhaps a grotesque exaggeration of the amount and value of cross-fertilisation in nature. However, after spending years of his life in studying some of the most astonishing instances of correlation and mutual adaptation between plant and insect that we know, Dr. Müller came to the conclusion that they did *not* indicate design. What are his reasons for this? On examination they turn out the veriest trifles. This Materialist, or Monist ceased to believe in an Almighty Maker of heaven and earth because he fancied that in the course of ages some flowers had been adapted to different insects at different times, that some flowers once fertilised by insects had again recurred to wind-fertilisation, and that some of the contrivances were occasionally eluded by wily insects. *Est-il possible?* So it seems an elastic, self-adjusting contrivance is no contrivance at all! A plan that contemplates, anticipates, and provides for changes is not a plan! We must, however, remember that in Germany itself a distinct reaction has begun against the extravagances of the Extreme Left in biology. Virchow and Du Bois Reymond both condemn the irrational dogmatising, and the fierce proselytism of the Haeckelian school. Unfortunately, it is too often the sensational books of "advanced" thinkers that are translated for the English market. I may add to what I have already said, that, in the main, I agree with Professor Duns; but I think that, owing probably to other demands upon his time, he has hardly done full justice to the subject, which is a very wide one, and might have been dealt with on a much broader basis. I do not know in what respects I can differ from what he has said, except with regard to details which it is not worth while at the present moment to go into. With reference to the general question of natural selection, people are at length beginning to realise that the theory is insufficient in itself to account for the production of new species, and in the last edition of his book on the origin of species Darwin himself has said he never stated that it was the only factor. Nevertheless, it must be confessed that, although he did formally say, in one place, that perhaps other factors had contributed to the formation of new species, yet, all through the book, as the most friendly critic must admit, he really does speak of it as if it were the sole factor in the creation of new species.

Mr. D. M'Laren.—I fully agree with Mr. James's remarks in regard to the evidence of design, not merely in regard to purpose or use, but likewise in regard to order. I should like to hear from him whether he thinks the symmetrical markings on the two sides of a butterfly's wing are to be taken as an example of the evidence of design in the matter of order. Let him, for example, take the different colouring on the antennæ of one of the common butterflies. It would seem that, in regard to order and colouring, there are obvious indications of design, and yet no one can assign, or has yet been able to discover, any obvious purpose or use in these things. There is an expression used by the Apostle Paul in the first chapter of the Epistle to the Romans which, I think, is very applicable to the attempts we see made to account for the origin of species in such a way as to set aside the Designer and Creator—"Professing themselves to be wise, they became fools." I do not wish to use this quotation in an odious sense; but, speaking simply from the results of one's own observation, it does seem extraordinary that men should prefer the process called evolution, as bringing about the wonderful results we see in nature, to a belief in the action of a designing Creator.

The Chairman.—I notice that on the third page of Professor Duns' paper the word "teleology" is employed in a somewhat unusual sense. The writer says: "The leading features of the new point of view are belief in teleology and denial of final cause." My idea was that teleology was the doctrine of final cause; but Professor Duns appears to use the word in another sense, and as if teleology were merely the science of causation, without final cause or purpose. I think Mr. James agrees with me that teleology is the science of final cause.

Rev. W. R. Blackett, M.A.—There are one or two points upon which I should like to express my gratitude to the author of this paper and also to its reader, for the instruction they have afforded us. One of these points is that, on the third page of the paper, Professor Duns points out that the recognition of design and contrivance has lain at the root of the immense advance in science which is represented by the discoveries and the work generally of a man like Cuvier. This certainly seems to bring before us a fact of immense value which we ought to bear in mind in all our discussions on this question. We are sometimes told that the idea of contrivance and final cause is opposed to science. I hope and trust that a more reasonable day is dawning upon us, when it will be seen, as has been suggested by Mr. James, that the denial of contrivance, or the maintenance of the notion of natural selection as the cause of the development of all things, is itself opposed to the advance of science. There is another point to which I should like to refer. On the last page but one of the paper the Author says: "There are others, again, who, like Asa Gray, accepting his system and working for its illustration, yet hold that it is not inconsistent with theism. It is doubtful, however, if this view be of any real value either to science or religion." It may not be of much value to science or religion, but it is of considerable use in our discussions, as frequently enabling us to maintain that to grant a great deal in the way of development and a great deal in the way of evolution is not absolutely inconsistent with theism. In this way we get a standing-point on which our ideas may be brought into touch with those who have acquired the notion that science is destructive of religion, and I think we are enabled to make good use of this in drawing attention to facts which perhaps they have never observed. (Hear, hear.) I for one fully believe that a large amount of evolution is perfectly consistent with theism, and that in all probability there may be, ultimately, a very considerable amount of compromise between the idea of evolution and that of contrivance. At the same time, I think it important to remember that the theory of natural selection does not account for everything, and that, even if we go back to development and evolution in their easiest and most general application, we must still believe in the power of adaptation and the power of evolution having been impressed on things from the very beginning. This is an argument which I have found to be of very great use. I remember that on one occasion, while I was in India, an educated native came to me, bringing with him two friends whom he had induced to accompany him in order that they might see how he would smash up the *padre*. He challenged me to a discussion on this point, and he maintained that there was no proof of the existence of God, inasmuch as natural law governed everything. I asked him, What governed natural law? where natural law came from? The poor man, much to his chagrin and somewhat to the complacent delight of the two gentlemen he had brought with him, was obliged to retire from the contest. I am not sure that a more eminent scientific man than he would have retired quite so quickly, but I do believe we can find a useful standpoint between ourselves and those who have been puzzled by the assumptions of evolutionism, if we abstain from maintaining that the evolution doctrine is utterly inconsistent with theism. There may be in evolutionism much that is consistent with theism. I think in the paper before us we have many points that it would be very difficult for an evolutionist who takes a broad view of the whole question, to satisfactorily overcome; and I think that, as Mr. James has suggested, it is just here that evolutionism falls short, namely, that its advocates do not take a broad view. Indeed, on the contrary, it seems to me that they take a very narrow view. (Hear, hear.) They look at one particular mode of development and advancement in the organisation of species until they get the theory thoroughly into their heads, and then they maintain that, because it is their prevailing idea, therefore, the same thing must hold good with regard to the world at large.

There is a failure to grasp the broad general facts evinced throughout the whole of their argument, and one thing which they seem to ignore and set aside is the absolute want of evidence of the evolution of any single species. If we keep this great fact before us, we shall not bow down with absolute submission before the idol of evolution until some more satisfactory proof has been put forward by those who expound that peculiar doctrine. (Applause.)

Mr. R. J. **Hammond.**—With reference to the, I think, too brief allusion made in the paper to Asa Gray, I am of opinion that there must be a great many who from their own observation would be inclined to think with him. (Hear, hear.) They are perhaps, deterred in some measure from saying what they think upon this point, because they are told that it ought not to be looked into, and that it is very doubtful whether anything can possibly come of it; but I cannot help thinking it is a thing that ought to be looked into.

Rev. J. **James**, M.A., said:—It appears to me that the writer of the paper, in speaking of "a belief in teleology and a denial of final cause," refers to two things that are inconsistent. Nevertheless, I think the paper one of great value. The author takes it for granted that there is a great deal in evolution;* and the value of the paper lies to a great extent in the fact, that it sets forth, very plainly and clearly, as all believers in a Creator would maintain, that not only is there, as Darwin himself would say, an origin to the system of evolution, but there is, attributable to the Almighty, in that system, the thought and wisdom contained in the idea of the perpetual presence of the Almighty to guide the development of the things He has designed. I hold that the theory of evolution alone does not stand good on any ground, and that there is more of true science in the suggestion that we have not only to believe in the divine origin of the system of evolution, but also in the periodical and occasional intervention by which it pleases God in His goodness to guide and direct the work of His own creation. The last three lines of the paper are very clear and expressive, namely, "Whereas all such fall into order and significance when traced to active intelligence, both as to origin and guidance." The writer might, as Mr. James has said, have developed his idea much more fully, and have shown that whereas, as Darwin has put it, human thought and skill have succeeded in bringing about variations in the animal world, it is much more to be expected that the thought and power of the Almighty would bring about greater changes from time to time; while it is only a rational inference that, if in accordance with this view of human intervention the changes attributed to man's action do not take place without his interposition, then, upon the same line of reasoning, all the other changes must have been brought about by the intervention of the Creator. (Hear, hear.) Surely, it is more philosophical to adopt this argument than to attribute all the advances and developments that have taken place in what we see around us to the mere theory of natural selection, brought about by physical personal influences; for, in the sentence quoted from Darwin by the author of the paper, "natural selection is daily and hourly scrutinising, throughout the world, every variation, even the slightest; rejecting that which is bad, preserving and adding up all that is good; silently and insensibly working, whenever and wherever opportunity offers,"—Darwin would actually seem to make a *person* of natural selection. To read such a passage is, it seems to me, to see the absurdity of it; and I think we owe our best thanks to the author of the paper for having brought forward, with so much effect for the purpose he had in view, so many important and significant points. I agree with what was said by the author of the paper when he stated that the system of evolution did not seem to apply to anything but the animate creation. If the inanimate objects of creation be the work of an Almighty wisdom, why, it may be asked, should we exclude the power and wisdom of the Almighty from the advancement of the animate creation? To do this is not philosophy, nor the love of wisdom in its widest sense. There can be little doubt but that Darwin was carried away by his wonderful knowledge of facts and his fanciful theory, which, from time to time, he admitted to be a theory, but which he still put forward as if it were a series of ascertained facts.

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* Mr. James probably means "the theory of Evolution."—Ed.

Mr. J. Hassell.—After I had perused Dr. Duns' paper I marked a portion of the paragraph, just referred to, on the third page of the paper; because it occurred to me that if that is what we are to understand by natural selection,—namely, the impersonation of non-entity—we are asked to accept a remarkably unscientific doctrine. I then turned to Professor Tyndall, to see what he said upon the subject, what facts he had to present, and what conclusions he drew from those facts. As I have already said in this room, while I am willing to sit at the feet of Huxley to learn the facts of physiology, or at the feet of Tyndall to acquire those of physical science, yet, when they come to draw their inferences, I reserve my right as an independent thinker, and use my own judgment. In his celebrated *Belfast Address*, Professor Tyndall says: "Natural selection acts as the preservation and accumulation of small inherited modifications, each profitable to the preserved being." Now, Professor Wallace says it is the fundamental doctrine of evolution that all changes of form and structure, all increase in the size of an organ or in its complexity, all great specialisations of the physiological divisions of nature, can only be brought about in so far as they are for the good of the being so modified. Well, if this be so, then I say the hypothesis of evolution must, of necessity, fall to the ground. As for myself, I cannot admit even that amount of evolution which one speaker would seem to wish me to accept. Let us take an example. According to the doctrine of evolution, there was a time when there were no animals living on the dry land—when there were no air-breathing creatures, all of them being aquatic. How came it, we may ask, that these aquatic creatures became air-breathing animals? One author tells us that the fish began to breathe air after being thrown upon the beach and undergoing some alteration of the swim-bladder, so as to form a rudimentary lung. But you will observe that the swim-bladder of a fish possessing that organ—for all of them have not got it—is exactly adapted for the purpose it is intended to serve, which is to render the creature specifically lighter than it would otherwise be, so that it is the more buoyant and better able to rise and sink in the dense medium it inhabits. Now, if that swim-bladder were operated upon by the atmosphere so as to be folded up and become a sort of lung, when the creature returned to the water it must do so with its swim-bladder less adapted to its aquatic existence than before, and it certainly could not be for the good of the fish that it should have to perform its movements with an inflamed swim-bladder. It may be said that it was not the swim-bladder, but the gills that were altered. Let us regard the matter from that point of view. If the gills of a fish be exposed to the atmosphere, and the creature is forced to breathe the external air without the intervention of the watery medium, then we immediately perceive that the branchia become inflamed, and it can hardly be said to be beneficial to the fish that it should return to the water with inflammation of the branchia. Indeed, for my own part, I think that this would have been decidedly to its disadvantage, and it appears to me that, if that is the mode by which the great Creator—certain of whom the evolutionists admit in the abstract—acted, having in the first instance worked by the one plan and then having changed it for the other, it is—and I say it with all due reverence—a very bungling method. It is much more reasonable to suppose that the Almighty Creator should have placed in some germ, such as an egg, all the potentiality required to produce the air-breathing creature, rather than that He should go through the process of creating some organ adapted for one purpose, and then should so alter it as to adapt it to another, this change being so effected that its effect, in the beginning of the metamorphosis, must have been to render the creature less adapted to the purposes of its original form and mode of existence. (Hear, hear.) I might illustrate this argument by many other examples. I might take, for instance, the hind hands of the quadrumana. Surely it is only reasonable to suppose that a creature with four perfect hands is much more likely to succeed in the struggle for life among the forest trees it has to climb, than one which has begun to lose the grasping power afforded by the two hind thumbs. Again, it seems to me that for such a creature to lose all the hairy covering of its body must have been extremely inconvenient, and very much against its habits and mode of existence. I hold, therefore, that we are not wrong in saying, at least until we are better informed, that we do not admit what the evolutionists demand of us. (Hear, hear.) I cannot accept the assumption that evolution, as it is presented to us, was God's plan; and I would write upon it the word "unproven," and I think that the way in which the question is presented to our minds by those who argue for a special creation is the better way. If God could, in the first instance, put into one particular germ all the potentialities afterwards required for all created things, why is it unphilosophical to say that He put into a series of germs that which was requisite for the potentialities of the different beings intended to be developed? Is it less scientific to say that God made twenty or thirty different types than that He made only one? I think not. On the contrary, I regard it as equally true, and scientific, and philosophical, to say that He may have done this, and that, as I believe, He really did. If it were not so, how comes it that we have the higher forms of animal life side by side with the very lowest—the perfect eye of the trilobite of past ages side by side with the foraminifera? Surely this is not to be accounted for on the assumption that everything we now see is the result of this process of natural selection, or blind, unreasoning chance, which waits for an opportunity, and which stops the fly from going into the plant by unconsciously putting around the flower certain curious hairs and glands, and so forth. If the evolutionists were to say that this was consciously done, then I might sit down, exclaiming, "What a wonderful plant!" But they admit that it is unconsciously, and I say the theory is very unscientific. I hold that theirs is not so good a plan as that which I have in my mind, namely, that the great God should, when it pleased Him, have given to so many germs or eggs the power of producing all the phenomena we see. Why not? Nature shows this everywhere, but not in the way of transmutation; I grant there are variations, but variations within strict limits, such as are seen among the pigeons, where we have the fantail, the pouter, and the jacobin, with a number of other varieties, which are all, however, in structure and habits, pigeons. Here you have variation, but not transmutation; and you may see the same thing in the carnivora. There you may observe great variety; but where do you see the carnivora entirely crossing the limits of their natural order and producing creatures of other kinds? Never! In fact, we know that there is an antipathy between certain families of the carnivora which is difficult to account for on the theory of natural selection, but which is not difficult to account for when we remember that there is a persistency to conserve the race. There is another fact which should not be overlooked, and that is, the order and design exhibited in the inanimate world. I was much struck with this in thinking over a point in physical geography the other day. Why should not the earth's axis be perpendicular with a universal unchanging season, year by year? Why should it not be horizontal? The explanation is, that if that were the case the earth would not be fitted, as it is, in almost every part, for the abode of man. When you consider the position of the tropics, with their constant sunlight of twelve hours each day, and the poles, with their six months of light and six months of darkness, you perceive that each has the same amount of day and night, while the accompanying changes and alternations in the seasons render every part of the earth more or less habitable. And, with regard to geology, it is clearly shown that, if the elevation of the land had been different to what it has been, one half of the world would have been uninhabitable. As you are all aware, the rise of the earth from the level of the sea goes on up to a culminating point in the tropics—the tropic of Cancer on the one side, and the tropic of Capricorn on the other. The highest ground is towards the tropics, and the lowest towards the poles. If this were reversed, and the culminating point given to the poles with the lowest ground towards the equator, what would be the result? You would have the tropics burnt up by torrid heat, and what is now the temperate zone nearly all frozen, while, if you went far north, there would be one scene of eternal frost and death. It would be a most extraordinary thing if the molecules of the earth had so arranged all this. Surely it would be a much more wonderful thing, and a greater strain upon our faith, to believe such a doctrine than to hold that it was designed by an infinitely wise Creator. I agree with Mr. James in thinking that this paper might have been advantageously enlarged. It could not be expected that we should take it for granted that the theory of evolution is in any way proved, and, for my own part, I am of opinion that special creation, within the limits I have put before you, is by far the more reasonable view to take, and answers much more satisfactorily every question arising in this great and important controversy. (Hear, hear.)

Mr. W. P. James, F.L.S.—As I have only been called upon to read the paper, I am, of course, not responsible for it, and therefore cannot be expected to reply to what has been advanced during this discussion. Indeed, I may say there are several points on which I do not concur with the writer; but in his absence it would hardly be fair to bring into prominence those matters on which I differ from him. I am glad to see the reference to Dr. Asa Gray, although it is, I think, too brief: Asa Gray is the most eminent representative of the school of naturalists who think that a strict theism may be combined with a system of evolution; and, to those who like to take their stand on that platform, I fancy his books present the argument in the most tenable shape in which it can be urged. The remarks I previously ventured to make were almost entirely confined to the part of the essay which treats of natural selection. This is not the same thing as evolution; it is merely a part of it. But with reference to the theory of descent—that is to say, the derivation of the existing plants and animals from their predecessors—that is a subject which is full of fascination. No naturalist can deny its attractions. In fact, all theories that seem to promise the view of a great unity have a very fascinating aspect. But when a botanist recovers from this feeling, and endeavours to trace the pedigree of plants, he sees that the conclusions arrived at are quite untenable. The same thing has been shown in relation to zoology by Mr. Hassell, in a paper read here two or three years ago, in which the attempt to prove the line of descent for the animal series is shown to be utterly impossible of demonstration. As with the animal so with the vegetable kingdom. If all the existing plants were derived from their predecessors, in time we ought to be able to arrange them in a strictly linear series; but, it is very soon found that this is utterly impossible, as well in regard to plants as to animals. With respect to plants, we should have to arrange them in four series—the algal type, the moss type, the fern type, and the flowering plant type; and, when it is found that we have set out on an impossible endeavour, the fascinating simplicity with which we started entirely disappears, and we find we have undertaken a hopeless task. The evolutionists cannot put them all into one line; they see at least four different lines of descent, and that below these four lines all attempt at unity is utterly impossible, because the lines end, and each forms a *cul-de-sac*. There is no connecting link between these four groups, and this fact is now generally admitted. Dr. Goebel, in the last volume of the last edition of the *Encyclopædia Britannica*, states that the gap between the mosses and ferns is the widest he knows of in the vegetable kingdom, and he is one who is favourably disposed towards the theory of descent. But the gap is equally wide between the other groups, the algæ and the rest being divided by tremendous gaps. Suppose, however, we take one of the groups, and attempt to go backwards. There is the moss group, which is a very small one. If you take that group, you can easily trace the species to two ancestors—the ordinary moss and the liver-moss. If you take the algæ group, you find that it also ends blindly in the olive, the red, and the green series of sea-weeds, which are excessively isolated, and cannot be traced to any common ancestors, but all end blindly. Consequently, all the fascinating simplicity has entirely gone; and this is admitted by those who advocate the theory of descent. They say, "As yet you can't go further back;" you have the threads of descent all hanging loose in the air, and you cannot trace them to any common point, nor to any ancestor, because, from their peculiar nature, they are so tender that their remains could not have been preserved in the early rocks; and therefore, as the means of tracing them have disappeared, the problem of their ancestry must remain for ever unsolved. If we take the vascular cryptogams, the ferns, horse-tails, and lycopods, it will be found that they are all equally distinct to the very end. We have in their case the same story over again. Then, when we come to the flowering plants, it is generally admitted to be rather difficult to show how the higher ones have developed from the pine-trees, which the theory requires. The most far-fetched and impossible hypotheses and assumptions have to be adopted in any such attempt. As a rule, the theory requires that what is never known to happen now used to happen quite commonly in bygone times, and, when you ask for the proof, you must be satisfied with the statement that everything that would have proved the theory has unfortunately disappeared. And yet why all the intermediate forms that would have proved it have disappeared is not apparent. The fossil remains of numerous species have been preserved in certain strata—in the coal measures, among the miocene flora of Switzerland, and in some of the chalk strata; and one naturally asks why the intermediate forms, which could alone prove the theory, should all have disappeared. So that really and truly, after the first feeling of fascination, which, as I have said, is very strong, exercised by the supposition that the whole of this natural system is one of blood-relationship—a feeling which no botanist or geologist can resist, with regard to one of the grandest attempts at systematising that was ever made,—the time comes when one sees how impossible it is to carry the sequence back to the very beginning, and a sort of reaction sets in. What I have said has only been about this theory of descent; it has nothing to do with the question of religion. I have been considering whether the theory is true, and I say it has not been shown to be true. Of course, the clergy have not the time to investigate these things; but I have sometimes heard in sermons the assumption made—a little too prematurely—that the theory is true, and then, that it is reconcilable with Christianity. But I repeat that it has not been shown to be true, and I think that, upon the whole, a slight reaction is beginning to evidence itself in the scientific world. Even Darwin admitted, in his last edition, that Mr. Mivart had brought powerful arguments against him. That gentleman is a distinguished zoologist, who doubts very much some of the conclusions at which Darwin arrived; and I suppose there is scarcely any one who nowadays says that natural selection, pure and simple, is sufficient to account for the production of species. We know that Professor Huxley has said very decidedly that it is not. The subject certainly is a most interesting one; but the question, as limited to the theory of descent, whether animals owe their origin to certain ancestors or not, must always be left to people's private judgment, as it cannot be decided, and, even on the part of the evolutionist, must be quite as much a matter of faith as the question of creation and other theories. (Applause.)

The meeting was then adjourned.

REMARKS ON THE FOREGOING PAPER.

BY SIR EDMUND S. BECKETT, BART., Q.C., LL.D.

I shall not be in London till Wednesday, and therefore cannot attend the meeting on Monday. Nor am I sufficiently versed in the special subject of Dr. Duns' paper to make any useful remarks thereon. But, on this general subject of Natural Selection *v.* Design, the more I read about it the more I see the incompetency of the automatic cosmogonists to account for the existence of anything in the world, and much more of the whole world. It is the most miserably illogical pretence of a scientific theory to say, as they in fact do, "We assume all the laws of nature to have been self-existent or self-produced, and then we will show you how some improvements and advances in some organised things might be produced; and then we shall ask you to conclude that all living things have advanced from lower ones in the same way. How the lowest began we cannot say." The proper answer to that is that it is bad reasoning at every stage. It is illogical to conclude that all changes can take place spontaneously because some can. So long as there are any phenomena, especially considerable ones, which you cannot so explain, it is illogical and unscientific to pretend that your theory is universal. We do not believe in gravity being universal because it is proved by some phenomena, but by all to which it can have any application. Show us what natural selection has done towards producing an oak-tree out of a toadstool, or the most rudimentary vegetable you like, and how that started; or answer any of the questions which have been put to you over and over again as to its power of producing all sorts of organisms, and you will be doing something. That is one end of the argument. The other is: Show us how you start anything out of either nothing or a state of absolute uniformity of matter and force, such as Mr. Spencer avowedly starts with, and all the anti-creation school, whether they avow it or not. They never have, and never can. Does any man in his senses believe that, if any Spencerian thought he could give a logical answer to the article on Spencerian Philosophy in the *Edinburgh Review* of January 1884, not one of them would have tried it; or to my paper in our Transactions about the same time. So far as I have seen, there has been no serious attempt to answer either of them. There have been a few of a merely personal or utterly frivolous kind, such as that in *Knowledge*, which filled two or three articles with elaborately discussing the degree of, first the wickedness, and then the carelessness, of miscopying which omitted exactly a line in Mr. Spencer's book, ending with the same four words as the next line; and then the interesting etymological question of the meaning of the word Axiom. And another long one was sent me from America which filled many pages with a prosy recital of the old story of Lord Brougham's review in the *Edinburgh* of Dr. Young's great theory of light, and then asked its readers to conclude that, because that was ignorant and wrong and Dr. Young's theory is proved to the satisfaction of every mathematician in the world, *therefore* the exposure of Mr. Spencer's utterly unproved theory is probably wrong too. If one may use a bit of very significant slang, we must keep the noses of these anti-creationists to the logical grindstone, and make them prove every step of their reasoning, instead of letting them wander off into abstract generalities and giving ourselves the trouble to follow and disprove them. That is not our business. Of course it is useful for those who are versed in particular branches of physiology to point out from time to time how natural selection fails to account for phenomena of various kinds; and, if the Spencerians or Haeckelites do not answer such charges, the logical inference is that they cannot. People who set up a new theory of light or electricity with no better proofs of it than have ever been given of theirs would be laughed to scorn by the scientific world. In one sense, therefore, "our strength is to sit still," and go on returning the verdict of "not proven" to every pretence of producing the world by a series of accidental departures from a state of dead uniformity of matter and force, until they can and do produce a complete explanation reaching from that zero up to the present infinity. As I have often said before, *we* have a theory which is indisputably sufficient for the purpose, and which will include as much natural and every other kind of selection as they can physiologically prove, and includes also the prime cause of all such selections, and of every other change and force, as to which they are utterly helpless, and indeed silent, and have no theory at all to account for the origin of any one of the infinite varieties of forces or laws of nature. Mr. Spencer is content to call them "unfathomable mysteries," and his disciples are foolish enough to accept that for an explanation, and to call that a more probable theory than ours, whereas it is mere nonsense, or words meaning nothing. May 3, 1885.

BY THE REV. CANON C. POPHAM MILES, M.A., M.D., F.L.S.

The subject of the paper is as interesting as it is important, and, in my judgment, the position taken by Professor Duns is a strictly scientific one. The paper is too brief; but I suppose this to be intentional. I have long held that Darwin's facts are unassailable, but that the inferences drawn by his more forward disciples are untenable.

THE AUTHOR'S REPLY.

I am gratified by the cordial references to my paper and the acceptance of its chief positions by those who took part in the discussion. The criticisms call for few remarks. Let me thank Mr. W. P. James for his able and interesting review. The brevity of the paper and the narrowing of the issue were both intentional. I agree with Mr. James that "order" should have a place in the doctrine of "final causes." This is fundamental. Had I been dealing with the general question, it would have been my starting-point. My reference to Asa Gray was necessarily brief, but no one well acquainted with Asa Gray's works can have a higher estimate than I have of their great value and of the attractive thoughtfulness and scientific ability of their author. I had only one point to speak to, and did it. It seems almost absurd that at this time of day one should feel it necessary to refer thus to a naturalist whom all scientific workers honour. The Chairman refers to my use of the word "teleology." I adhere to this. Much confusion in popular apologetic literature has already arisen from employing this word as the equivalent of final cause. Darwinians hold themselves the authoritative exponents and illustrators of "Teleology"—that is, fitnesses between organs and functions, between different parts of individual features of structure, between living forms and their environments, &c., while, notoriously, they refuse to acknowledge "Final Cause,"—that is personal prevision, purpose, and end. Perhaps in no recent book are there so many illustrations of teleology as in Darwin's work on the *Fertilisation of Orchids.* Did he believe in the Doctrine of Final Causes? The Rev. J. James infers that "I take it for granted there is a great deal in Evolution." Whereas, I hoped the paper would show that I put no value on the Evolution pleaded for in the scheme of Natural Selection. And I still think this has been made sufficiently evident.

ORDINARY MEETING, DECEMBER 7, 1885.

D. HOWARD, ESQ., VICE-PRESIDENT OF THE CHEMICAL SOCIETY, IN THE CHAIR.

The Minutes of the last Meeting were read and confirmed, and the following Elections were announced:—

LIFE MEMBERS:—Rev. F. Paynter, M.A., Guildford; Rev. C. Marshall, M.A., Hertford.

MEMBERS:—S. V. Coote, Esq., Southampton; Rev. H. Crosby, D.D., LL.D., United States; H. Edgell Hunt, Esq., London; W. Ewart, Esq., M.P., Belfast; Rev. Prof. G. S. Gould, London; Rev. J. H. Mason Knox, D.D., LL.D., United States; Very Rev. Dean Macartney, Melbourne; G. H. Pember, Esq., Devon.

LIFE ASSOCIATES:—The Lord Bishop of Worcester; J. A. Payne, Esq., Lagos.

ASSOCIATES:—The Bishop of Nova Scotia; The Bishop of Japan; Professor J. D. Dana, F.R.S., United States; Professor S. A. Martin, United States; Professor E. T. Jeffers, A.M., D.D., United States; Professor J. Brough, Wales; Professor J. G. Lausing, D.D., United States; President M. F. Carey, M.A., United States; Rev. G. Cron, Belfast; Rev. S. Crockett, United States; Rev. W. D. B. Currey, B.A., Newcastle; Rev. H. J. Clark, Birmingham; Rev. W. Dunkerley, Liverpool; Rev. Canon J. R. Eyre, M.A., Liverpool; Rev. R. R. Eva, A.K.C., Queensland; Rev. R. H. Fleming, Virginia, United States; Rev. W. R. Fletcher, South Australia; Rev. Prebendary E. C. S. Gibson, M.A., Wilts; Rev. F. F. Gough, M.A., Wolverhampton; Rev. Canon Hurst, D.D., Middlesex; Rev. J. Jefferis, LL.D., N. S. Wales; Rev. L. D. Lyon-Bennett, Cheshire; Rev. H. London, M.A., Yorks; Rev. Canon W. Lefroy, M.A., Liverpool; Rev. P. W. Moses, N. Queensland; Rev. C. T. Porter, D.D., LL.D., Southport; Rev. A. Peache, D.D., Middlesex; Rev. Canon Saltron Rogers, M.A., Cornwall; Rev. R. Salthouse, F.R.G.S., West Derby, Liverpool; Rev. F. E. Spooner, New South Wales; Rev. R. Stephenson, M.A., Southport; Rev. F. B. Tyrer, Liverpool; Rev. G. Turner, LL.D., Birkenhead; Rev. R. Workman, B.D., Belfast; Rev. E. Warbreck, M.A., Burton-on-Trent; Dr. S. C. Butler, United States; C. H. Binsteed, Esq., Surrey; G. D. Banyard, Esq., Enfield; Dr. A. Campbell, M.L.C., S. Australia; F. Curtiss, Esq., N. S. Wales; W. S. Dent, Esq., Streatham; C. S. Farthing, Esq., Kenilworth; C. E. Green, Esq., United States; W. Galloway, Esq., F.G.S., Cardiff; Lieut. Commander, A. J. Iverson, U.S.N., United States; R. W. Murray, Esq., J.P., Belfast; G. A. Moore, Esq., United States; J. S. McIntyre, Esq., Queensland; Lieut. Col. J. R. McClurg, M.D., United States; J. D. Moody, Esq., D.D.S., United States; F. W. Uther, Esq., N. S. Wales; L. G. Yates, Esq., D.D.S., United States; Mrs. Lloyd, Brighton.

Hon. Corresponding Members:—Rev. J. O. Dorsey, United States Ethnological Department; Rev. W. D. Ground, Scotswood; Rev. S. C. Adam, M.A., Wolverhampton; Rev. W. T. Storrs, Sandown; Mrs. E. Finn, Brook Green.

Also the presentation for the library of the following works:—

"Proceedings of the Royal Society."	*From the same.*
"Proceedings of the Royal Dublin Society."	"
"Proceedings of the Royal Colonial Institute."	"
"Proceedings of the Royal Institution."	"
"Proceedings of the Royal Geographical Society."	"
"Proceedings of the Royal United Service Institution."	"
"Proceedings of the Geological Society."	"
"Proceedings of the United States Geological Survey."	"
"Proceedings of the United States Geographical Survey."	"
"Proceedings of the American Geographical Society."	"
"Proceedings of the Newport Natural History Society."	"

The Chairman (D. Howard, Esq., V.P.C.S.).—Before we commence the ordinary business of this meeting, I think it my duty to remind you that we have to lament, in common with so many societies which have a high and noble object in England, the loss of our revered President. There are few men who ever have been, or who ever could be, his equal. A man of birth and high position, of admirable intellect, along with which, however, he always preserved entire the simplicity which marks the faith of a little child,—one who laid all his gifts, and very great they were, at his Master's feet, and of whom it is perfectly true that he was not one of those who hardly enter into the kingdom of Heaven, because, though rich in intellect and possessions, he nevertheless possessed nothing, inasmuch as he gave up all to his Master's service—of such a man we can only say, that a life like his affords one of the noblest evidences we could possibly obtain of the truth of the Christian religion. For where else shall we find the motive for such a life, or the power which strengthened him who lived it, even in his old age, with a constant and unswerving zeal to carry out the work in which he was engaged? The last time I saw him, feeble though he was, there was the same ever-young spirit which then, as always, showed him as living in his Master's presence; and, although we have lost in him what can never be restored to us, we cannot but feel that both ourselves and the whole Church of Christ have, in the memory of his life and works, a possession that will never pass away. I can only add, that in these days when the failures and difficulties of Christians are cast, sometimes very unfairly, against us as an argument against Christianity, it is no small thing to be able to point to one who did the work of his Master on earth, as did the late Earl of Shaftesbury.

The following paper was then read by the author :—

THE UNREASONABLENESS OF AGNOSTICISM.

By JOSEPH HASSELL, A.K.C. Lond.

Before commencing my paper, I may perhaps be allowed to state the reasons which induced me to write it. About two years ago I was thrown into the society of some students attending one of our public schools, and, while conversing with them on some of the current topics of the day, I found that their minds were strongly imbued with the Spencerian doctrine that God is "unknowable." These young men were particularly anxious to impress me with the fact that they were not Atheists, for they did not deny the existence of a "First Cause"; but they had, they said, considerable difficulty in accepting the doctrine of a "Personal God," who could be known and worshipped. After my conversation with them, it seemed to me that a paper, dealing with the subject in a simple manner, might be useful, and I set to work to write such. By the kindness of the Council of this Institute, I am now permitted to lay my paper before the members, and, if its reading should initiate a discussion that may advance the cause of truth, I shall be thankful.

THERE are at the present day very many thoughtful men who are not Atheists, for they are willing to admit that there must have been a First Cause. But, though not Atheists, they do not believe in a *Personal God,* to whom they are related as creatures, and to whom they are responsible for their conduct. When questioned concerning the ground of their unbelief, these individuals say that they agree with Mr. Herbert Spencer, in thinking that, if there be a God, He must, from the very nature of the case, be to man the "Unknowable." And, as to a future life, the subject is so shrouded in mystery that no one can ever expect to understand it. They thus confess that, respecting the Person of God and the nature of human responsibility, they are Agnostics. It is to such we desire to speak, and if possible convince them that the assertion that "God is unknowable" is false. In dealing with the subject, it will be necessary in the first place to consider what is involved in the terms "knowable" and "unknowable."

The word "*knowable*" is, as all are aware, an adjective derived from the verb "to know," and this means—1st, "to perceive with certainty"; 2nd, "to distinguish"; and 3rd, "to recognise." Thus, then, by the "knowable" is meant that which is capable of being discovered or recognised, ascertained or understood. The "*unknowable*," therefore, is that which cannot be discovered or recognised, understood or ascertained. It will be necessary to keep prominently before the mind these definitions when examining Mr. Spencer's arguments by which he strives to prove that, if there be a God, He must of necessity be to man the "Unknowable." In the second place, it will be necessary to show the fallacy with which Mr. Spencer starts, and on which he bases his argument to prove that God is the "Unthinkable" and the "Unknowable."

Mr. Herbert Spencer, in his *First Principles*, ch. ii. "Ultimate Religious Ideas," asserts that the human mind cannot form an adequate idea of the world as a whole—that is, the mind cannot have a conception of the world,—a conception properly so called, but only what he terms a symbolic conception. He says:—

> "When on the sea-shore we note how the hulls of distant vessels are hidden below the horizon, and how of still remoter vessels only the uppermost sails are visible, we realise with tolerable clearness the slight curvature of that portion of the sea's surface which lies before us. But when we seek in imagination to follow out this curved surface as it actually exists, slowly bending round until all its meridians meet in a point eight thousand miles below our feet, we find ourselves utterly baffled. We cannot conceive in its real form and magnitude even that small segment of our globe which extends a hundred miles on each side of us; much less the globe as a whole. What conception, then, do we form of it? the reader may ask. That its name calls up in us some state of consciousness is unquestionable; and if this state of consciousness is not a conception, properly so called, what is it? The answer seems to be this:—We have learnt by indirect methods that the earth is a sphere; we have formed models approximately representing its shape and the distribution of its parts; generally, when the earth is referred to, we either think of an indefinitely-extended mass beneath our feet, or else, leaving out the actual earth, we think of a body like a terrestrial globe; but, when we seek to imagine the earth as it really is, we join these two ideas as well as we can, and such perceptions as our eyes give us of the earth's surface we couple with the conception of a sphere. And thus we form of the earth, not a conception, properly so called, but only a symbolic conception." *

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* *First Principles*, 2nd ed., chapter ii. pp. 25, 26.

But is Mr. Spencer right in the assertion that the mind of man is not able to form a true concept of the size of the earth? We think he is not right. We admit that there are many persons who, from a want of extended observation, may not be able to form a true concept of the size of the earth, and we are quite willing to admit that Mr. Herbert Spencer, like the writer, may be one of these individuals: but we maintain that he is altogether wrong when he says the *human mind* is not able to form the concept. In point of fact, Mr. Spencer asserts that there is no one to be found who can form this particular concept. To this we demur. Let us put away from our thoughts, ourselves, Mr. Herbert Spencer, and his followers, and take the case of a sea-captain who has many times sailed round the world. Such a man has had many opportunities of observing the curvature of the earth: he has noted the number of miles which he has travelled, each of which he knew was a portion of a curved surface; and putting his knowledge of continuous curvature to his knowledge of distance, he *knows* that the thousands of miles which he has travelled have been on an ocean which is not an extended plain, but a part of a sphere: and then, when he, after a number of days, finds himself entering the same port from which he started, he has an evidence that the earth is a sphere, and the records of his log-book prove that this sphere is twenty-five thousand miles in circumference. This man can, we say, form a true concept of the shape and size of the earth without the aid of any symbol. Now, what one sea-captain can do, a thousand others can do, and so we maintain that Mr. Spencer is altogether wrong when he asserts that the human mind is unable to form a true concept of the size and form of the earth on which we live. His argument in this particular is fallacious.

In the third place, it will be necessary to examine Mr. Spencer's application of this fallacious argument. Having thus shown, as he supposes, that there are tangible things of which the mind of man can form no true concept, Mr. Spencer next proceeds to apply his agument, and endeavours to prove that, concerning the origin of the world and the Person of God, man can also form no intelligible idea.

Respecting the origin of the universe, Mr. Spencer says three ideas are possible:—

1st.—That the universe is "self-existent"; 2nd, that it is "self-created"; and 3rd, that it is created by an external agency. He then examines separately these hypotheses, and endeavours to show that each is "unthinkable." From this he infers that the origin of the universe is one of the things which, being "unthinkable," is therefore "unknowable." His line of argument is something like the following:—

A self-existent universe implies a universe existing without a beginning, but existence without a beginning is inconceivable.

2nd.—A self-created universe is not conceivable, because before the universe existed, there must have been nothing, and that nothing must have itself produced something, and this is inconceivable.

3rd.—A universe created by external agency is inconceivable, because the human mind cannot link into one proposition something and nothing.

Thus, then, according to Mr. Spencer, the origin of the universe is proved to reside in the region which our minds cannot enter. It lies on the other side of the line which limits the "knowable." Well, suppose this to be so. What then? Are we to refuse to believe that the universe was created by external agency, because we cannot form a just conception of how such a thing can be? See where such a conclusion would lead us! Mr. Ground, in his *Spencer's Structural Principles Examined,* well says, concerning this:—

> "'To conceive,' 'to know,' 'to comprehend,' is to stand in mental relation to the thing comprehended. That thing comprehended is the objective fact, and to comprehend it is to stand in mental or subjective relation to it. Consequently, to conceive or comprehend the origin of the universe would demand that the being who conceived that origin should stand in mental relation to it. Now, the 'origin of the universe' is that precise operation which took place when the primal origin 'nothing' passed into 'something.' 'Nothing' is one of the limits of the proposition, 'something' is the other. But, as 'nothing' cannot be conceived by us, the only possible mode of our standing in relation to the origin of the universe would be by ourselves beholding that origin. In no other way could the concept come before us. But before we could behold that origin we must ourselves be existent.
>
> "Now, by the hypothesis, we form no part of the originated universe, because we are to be present at its origin. Clearly, therefore, we could be existing and beholding at the origin only by being ourselves the originator. That is to say, to conceive the origin of the universe is an operation possible only to the Creator! One of the things 'unknowable' is thus shown to reside in the realm where Deity only can enter. All that Mr. Spencer shows is that man is not God, which is a truism needing no logic to prove."

Much in the same way, Mr. Spencer argues as to the nature of the universe, and the Person of God, which he holds to be also "Unknowable." Stripped of its figures, and reduced to a number of propositions, the reasoning of the Agnostic is this: "Because I am not myself the Infinite and the Absolute, I decline to believe in the existence of any Infinite and Absolute Personality. Because I am not myself the Supreme God, I decline to believe that there is any

Personal God. Because I do not comprehend in myself the entire Totality of Existence, I decline to believe there is any person who does comprehend that Totality."

But such reasoning as this is unphilosophic. As well might a man say, because I do not understand all the principles of a science, I will not believe in that science. A little reflection on the part of any thoughtful person will convince him that he *does* believe in a great many things which he does not entirely comprehend. Many examples of this may be found in the circle of the sciences; such, for instance, as crystallography on the one hand, and mental phenomena on the other. We do not know *why* it is that one substance when it crystallises always assumes the cubic form, while another always assumes the rhomboidal. We do not know how it is that the faculty of memory is able to store up its treasures—keeping each set of facts separate, and reproducing each at will. Why these things are as they are is a question which cannot be answered, and yet we are fully convinced that they are so: both are most certain truths. And in the case of memory, the unknown truth is one which daily influences our actions. If a person were to say, because I cannot understand how it is that my memory can keep the facts of history distinct from the facts of geography, I will not trust either to its keeping, would he not be considered wanting in wisdom, or even sense? In like manner, is not the man wanting in wisdom who says, because I cannot understand the whole nature of God, I will not acknowledge His being, nor my relation to Him as a creature? We think he is.

Admitting, then, for argument sake, that as finite creatures we are not able fully to understand the whole of God's nature,—for "Who by searching can find out God?"—yet we maintain that it is possible to know *something* of Him; enough, in fact, to lead us to revere Him, and enough to enable us to hold conscious intercourse with Him who is the Father of Spirits.

We will now proceed to show how this knowledge is gained.

First Proposition.—*It is beyond doubt that Mind exists in the universe.* Mind is an attribute of personality. Mind, therefore, is one of the phenomena by which we recognise a Personal God.

The existence of mind is an undoubted fact. But its existence independent of matter is denied by some persons. A little reflection, however, will show that the human mind is a distinct thing from the substance of the brain which is its organ.

An illustration taken from the science of physiology may be useful here. Suppose the assertion to be made that the human lungs exhale carbonic acid gas. A person altogether ignorant of the science might say, I cannot see this particular gas, how then am I to know that what is asserted is true? The proof would have to be worked out in the following way. Some lime-water having been procured, the individual would be directed to breathe through a glass tube which had one of its ends immersed in the solution. After breathing for a few seconds, he would be asked to say what he observed. Namely, that the water had assumed a milky appearance; and this, he would be told, was due to the union of carbonic acid gas with the lime held in solution by the water—thus forming a carbonate of lime—chalk—which is of a white colour. As this change was due to the presence of carbonic acid gas, which he had himself put in by breathing, it must have had its origin in the lungs; and so it would be proved beyond doubt that the human lungs do exhale carbonic acid gas. So much, then, for the *physical* fact. But then there is the *mental* fact, the sense of whiteness. How comes this? Is that due to a physical act or a mental phenomenon? Let us see. Colour is produced, we are told, by the length of the rays of light as they impinge upon the retina of the eye, and set up certain currents, which ultimately reach the brain. All, then, that the brain receives is *motion*, but mere motion is not whiteness. How, then, comes the consciousness of the fact? In other words, how can we pass from the mere fact of a nerve-motion to the fact of consciousness? Only, we think, on the hypothesis of an interpreting mind. We conclude, therefore, that there is such a phenomenon as mind. But whence this mind? Mind can only be originated by mind. No effort enables us to think that the motion of a nerve-molecule could ever give birth to that immaterial mind which we have seen present in the individual—that mere motion is intelligent is indeed "unthinkable." Even Professor Tyndall admits this. His words are well worth careful consideration. He says:—

> "What is the causal connexion between molecular motions and states of consciousness? My answer is, I do not see the connexion, nor am I acquainted with anybody who does. It is no explanation to say that the objective and subjective are two sides of one and the same phenomenon. Why should the phenomenon have two sides? This is the very core of the difficulty. There are plenty of molecular motions which do not exhibit this two-sidedness. Does water think or feel when it runs into frost-ferns upon a window-pane? If not, why should the molecular motion of the brain be yoked to this mysterious companion—consciousness? We can form a coherent picture of all the purely physical processes,—the stirring of the brain, the thrilling of the nerves, the discharging of the muscles,

> and all the subsequent motions of the organism. We are here dealing with mechanical problems, which are mentally presentable. But we can form no picture of the process whereby consciousness emerges, either as a necessary link, or as an accidental by-product, of this series of actions. The reverse process of the production of motion by consciousness is equally unpresentable to the mind. We are here, in fact, on the boundary line of the intellect, where the ordinary canons of science fail to extricate us from difficulty."

And Professor Huxley in his *Lay Sermons* says :—

> "The man of science, who, forgetting the limits of philosophical inquiry, slides from these formulæ—and symbols into what is commonly understood by Materialism, seems to me to place himself on a level with the mathematician who should mistake the x's and y's with which he works his problems for real entities, and with this further disadvantage, as compared with the mathematician, that the blunders of the latter are of no practical consequence, while the error of systematic Materialism may paralyse the energies and destroy the beauty of a life."

If, then, no effort enables us to travel from one to the other, it is clear that no effort can enable us to think that one originated the other. Mind only, we are forced to think, could originate mind; matter only change into different forms of matter. Now, as the originating mind was the cause of our being, *our own sense of personality enables us to know that God is*, and that He is the Great Intelligence to whom we as intelligent beings should render homage.

Second Proposition.—*If man uses his own intelligence in his study of nature, he will discover that matter in its qualities and combinations is stamped with the seal of intelligence.* Now, as intelligence is one of the attributes of mind, and as mind is an attribute of personality, we see in matter the footprints of a Personal God.

It will be easy to show that the laws which govern inanimate nature, and the organisation which characterises all living things and sentient beings, are each and all stamped with the unmistakable seal of intelligence, and in these we say we can learn something of God, and therefore know Him. A few examples must suffice :—

1. *In the arrangements for the production of the seasons we can recognise the footprints of God.* In consequence of the axis of the earth being inclined twenty-two and a half degrees out of the perpendicular, both poles are brought opposite the sun once in every complete revolution round that orb, and hence the alternation of seasons. Winter, spring, summer, and autumn are secured. If the axis had been either perpendicular or horizontal to its orbit, then there would have

been no variation either in the length of days or in the character of the seasons. Eternal cold in the arctic circles would have caused eternal death in those regions, and the full blaze of summer heat would have beat on the torrid zones. But, in consequence of the present arrangement, every part of the earth is in its turn cheered by the sun, and the total sum of daylight and darkness is the same in all parts of the globe. As a consequence of this, countries which would otherwise have been unproductive are now rendered fertile. Whence, we ask, this benevolent arrangement ? If by the unconscious action of unthinking molecules of matter, or by the means of molecular motion, surely the result is very surprising, surpassing thought,—in a word, "unthinkable." But, given an intelligent Creator, who was working for the good of His creatures, then the present arrangement is perfectly intelligible. And thus as the earth moves on its course it silently, but unmistakably, proclaims the power and wisdom of God, and so we may well say in the words of the Psalmist,—

> "The heavens declare the glory of God ;
> And the firmament showeth his handiwork.
> Day unto day uttereth speech,
> And night unto night showeth knowledge."

Or, with the Christian poet,—

> "The spacious firmament on high,
> With all the blue ethereal sky,
> The spangled heavens, a shining frame,
> Their great original proclaim.
> The unwearied sun from day to day
> Does his Creator's power display,
> And publishes to every land
> The work of an Almighty hand."

2.—*In the general arrangement of the mountain systems of our globe we see the evidence of God's benevolent work for the good of His creatures.* The students of physical geography know that the elevation of the land is, generally speaking, from the Poles towards the Equator, the culminating point being in the neighbourhood of the tropic of Cancer on the the one side and of Capricorn on the other side. One of the effects of this general arrangement is to temper the burning heats of the tropical regions and give them a variety of climate.

If this order were reversed and the elevation of the land went on increasing toward the Arctic and Antarctic circles, that which is the most civilised half of the world at the present day would be a frozen and an uninhabitable desert. And what would India and Africa be without their mountains? Without the Himalayas no great Mustakh glacier, and without this 36 miles of ice there would have been but puny streams in the place of the mighty rivers of the present day—if, indeed, there would be any rivers at all.

Without the mountains of Abyssinia, there would be no Lake Nyanza or Victoria, and without these no Nile, and what would Egypt be without her one water-course? Without the snows on the mountains of Central Africa, there would be no rising of the Nile, even if the river existed. And without the annual inundation caused by the rise of the Nile, Egypt would long ago have been a great Sahara.

Surely, then, we are justified in attributing the present arrangement in this particular to the operations of intelligence—intelligence guided by benevolence; and hence, as we look at the hills and mountains rearing their summits higher and higher as they approach the equatorial region, we see the marks, the footprints, of a personality,—in other words, the footprints of God, whom we are thus able to recognise, and on those very summits that proclaim His existence we can hold conscious intercourse with their Maker.

3. *We can recognise God in the operations of the laws which govern matter, and in some cases, as with water, the beneficent exception to a general law.* One of the effects of heat is expansion, and the abstraction of heat is accompanied by contraction. Now, water is an exception to this general rule, being expanded both by heat and by cold. Between the temperatures of 40° F. and 212° F. water expands fully one-thirtieth of its bulk; but when it is at 40° F. its greatest density is obtained, and any further cooling causes the water to expand, so that its tendency is to rise and occupy the surface. In this way the top layer is the first to attain the temperature of 32°, and crystallise into a thin film of ice, while below it the water retains its temperature of greatest density of 40°. Now, as neither ice nor water is able to conduct heat with rapidity, they have but little tendency to transmit the cold downwards. Hence, the ice is not only slow in attaining any great thickness, but it also protects the water below from the effects of cold winds and low temperature. Now, if it were not for this exception to the general law, whenever ice was formed it would be at the bottom of rivers and lakes, and they would, in the frigid zones, long ago have become solid blocks of ice, which no summer sun could have melted; and thus death and desolation would have held their sway. But the Divine Mind, seeing the end from the beginning, and having regard for the

welfare of man, whom He intended to place on the earth, arranged this exception; and thus it is that in every piece of ice that is formed we can recognise the stamp of intelligence —the footprint of a personal God.

Third Proposition.—*God can be recognised in the marvels of organisation.* If it is possible to recognise God by His footprints on inorganic matter, it is even more easy to see those footprints in the world of organisation, both animate and inanimate. One example must suffice. It shall be taken from among the lowest forms of animal life,—one of the *Protozoa,* a sponge,—and the particular point shall be the means provided for the oxygenation of the circulatory fluids, and for obtaining food. This lowly creature, like all animals, must be nourished by food. It is, however, except as a germ, fixed during the whole of its life, and so is unable to go in search of its prey. What, then, must be done? The food must be brought to it. How is this accomplished? Thus: Its internal structure consists of a number of canals and cavities. The cavities are furnished with numerous delicate cilia, and these ciliated cavities are in connexion with an incurrent and excurrent system of canals. The former are connected with numerous pores, which are periodically opened and closed in the dermal membrane: the latter are in direct connexion with the oscula, as the permanent open channels are called. When, therefore, the pores are opened, and the cilia which line the cavities are moved rapidly, the water in them is set in motion, and passes out by the oscula, more water, of course, passing in to take the place of that which flows out, and thus a constant current is produced. The water, as it passes through the structure, brings with it both the oxygen and the food which are necessary for the support of the creature.

Thus, then, whenever we look at such a lowly creature as the common sponge, we can, if we are so minded, see the evidences of both power and wisdom; and as these are the attributes of personality, we can in them see or recognise God; and if we can recognise Him, we must know Him. And so we are bold enough to say that when Mr. Herbert Spencer asserts that God is "Unknowable," he is asserting what is not true. We know that everywhere we are surrounded with the evidence of God's existence in the marks of intelligence which are stamped on matter. We can recognise His footsteps impressed, as it were, on the laws which govern matter, and also on the wonders of organisation. And, if we thus recognise His presence in His works, we can know Him—that is, we can know Him as a God of power, a God of wisdom, and a God of benevolence. True, we may not know all that is to be learnt of God, for He is the Infinite, and we are finite. We are, as it were, but one of the little streams which run down the mountain-sides, while He is the mighty ocean, and of course the lesser cannot contain the whole of the greater. Man's mind is but a part of the fulness of the Creator, and so it cannot contain the whole; but yet, as it is a part, it is able to recognise and understand something of the nature of its great Original, and so we maintain that God is known by His works, and known, not as a mere abstraction, but as a Being. Every blade of grass that springs up out of the ground, every tiny insect that flies in the air, every sentient being that walks the earth, and every law of nature bears the impress of intelligence; and thus we can know enough of God to lead us to acknowledge His power and give Him our service. And what the understanding fails to grasp, for want of capacity, faith, the soul's eye and hand, perceives and embraces; and thus there is an inward realisation that "this God is our God for ever and ever, and that He will be our guide even unto death."

Fourth Proposition.—*God has made a revelation to man of those things which could not otherwise be known.* Having shown why we consider God to be in a measure "knowable," and having conceded the point that, inasmuch as God is an Infinite Being and man but finite, there must of necessity be in His nature much which cannot be found out, we pass to the consideration of the means by which the unknowable element in the knowable may be known.

Those persons who receive the teaching of Mr. Herbert Spencer consider that a revelation from God to man is not "conceivable," is not "thinkable," and therefore they do not accept the Bible as a book containing such a revelation. To such we offer the following considerations:—

First.—It is beyond doubt that man is able to recognise in himself a personality which is endowed with a certain freedom of will. And it is also beyond doubt that man's mind—that is, the power by which he becomes conscious of his own personality—owes its existence to a greater mind, a greater Personality, who by the very act of bestowing it on man proved He possessed absolute power to communicate. In other words, it is beyond doubt that the Divine Mind did at the first endow man with a mind—did, in fact, communicate to man a quality found only in connexion with personality.

Second.—Admitting that the communication of the Divine

Mind with the human mind may be a mystery, its mysteriousness is no valid ground for its denial. There are many things in nature which are mysteries, and yet we know them to be facts. Thus the transmission of the magnetic force is a mystery. Every student of science knows that the attractive force of the magnet can pass through both solids and liquids, as well as through gases. But not even a Faraday nor a Tyndall can explain how it is done. There stands the fact that the intangible power penetrates the solid mass, and passes through it without losing any of its properties in its passage; but to the question, How is this accomplished? there is no answer. What is true, in this particular, of magnetism, is true also of many other forces of nature. If, then, there be mysteries connected with the physical sciences which we cannot unravel, and yet we believe in them, why should we hesitate to accept the mystery of the communication of the Divine Mind with the human mind? In other words, why should we doubt the possibility, or probability, of a revelation from God concerning those things which relating to Himself and man's future could not otherwise be known? Admitting, then, the possibility, and assuming the probability, of a revelation from God, it may naturally be asked, Are the Scriptures as we have them a Divine revelation? are they the communication of the Divine Mind to certain individuals?

In considering this part of the subject, it will be necessary to notice the ways in which the Divine Mind could communicate His will to His creatures.

In the first place, it is conceivable that God could, if He pleases, make known His will to man through the instrumentality of angels. But such a revelation would need to be constantly repeated, in order that each succeeding generation might be made acquainted with the truth thus made known. In the second place, it is conceivable that God could, if He pleases, make known His will to man by the instrumentality of language, or mental suggestions—God himself speaking to man either by an audible voice, or by silent suggestion, or by visions. If it is possible, as we know it is, for an intangible force to pass into a solid body, producing—as in the case of heat—an alteration in the condition of the body, why should it be considered impossible for the Divine Mind to pass into the human mind, and thus reveal truths which could not otherwise be known. Nor is it unreasonable to believe that God can, if He pleases, grant to man visions of Himself, and thus hold converse with His creatures. And so we claim the right to adopt the language of the writer of the Epistle to the Hebrews, and say, "God having of old time spoken unto the fathers in the prophets by divers portions and in divers manners, hath at the end of these days spoken unto us in His Son, whom He appointed heir of all things, through whom also He made the world."* This revelation, which we call the Bible, in its entirety puts man in possession of all he requires to know respecting God's character and his own responsibility to his Maker in this present world, and his relation to Him in the future.

The full consideration of the various evidences which may be adduced to prove that the Scriptures of the Old and New Testaments are what they profess to be does not come within the scope of the present paper. Suffice it to say, that when those evidences are submitted to the test of reason, they are found to be credible.

First.—There stands the fact that some of its writers uttered predictions respecting persons and places which were in subsequent times fulfilled to the very letter.

Second.—There stands the fact, that the writings of forty individuals living in different places, and embracing a period of sixteen centuries, are on examination found to have a perfect unity; and running through them all there is a silver line, which, when followed through all its windings, is found to lead to the one incomparable Being, the man Christ Jesus. Surely these things tend to prove that "holy men of old spake as they were moved by the Holy Ghost."

Third.—When the contents of the Bible are carefully examined, they are found to contain revelations of those things which man desires to know. The human soul sighs to know something of the future, and this the Scriptures reveal; man wants to know how the future, which he instinctively believes in, can be spent in happiness, and this the Scriptures reveal. When man looks around him and sees wickedness unpunished and virtue unrewarded, his moral sense is shocked, and he is perplexed. But, when he opens the pages of sacred writ, he finds that there will be a time when virtue will be rewarded, and when vice will be punished, and thus he learns that in the end the God of all the earth will do right, and thus he finds that the revelation which God has given to man in the Scriptures is in harmony with the moral sense of the race.

And this is what might be expected, since God is the infinitely good. Of such a Being it is inconceivable that He, "loving man as His offspring and desiring his welfare, should withhold from him that knowledge which must be the noblest, the most desirable, and the most useful—the knowledge of

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* Heb. i. 1, 2.—R. V.

Himself." And this knowledge we have in the Scriptures of the Old and New Testaments, and

"This lamp from off the everlasting throne
Mercy took down; and in the night of time
Stands, casting on the dark her gracious bow,
And evermore beseeching men, with tears,
And earnest sighs, to hear, believe, and live."

Our work is done. We have shown that God can be known, and is known, by His works; that those things respecting the nature of the Infinite which could not be discovered by human reason, because it is finite, God has revealed in the Scriptures of the Old and New Testaments; and that this revelation is in harmony with the religious sentiments and the moral sense of man, and satisfy the cravings of the human mind by making known the nature and occupation of the future to which all are hastening. And thus we claim the right to place over the assertion of the Agnostics, that God is "Unknowable," the epitaph "Unreasonable," and append the words of Robert Browning:—

"God and the soul the only facts for me.
Prove them facts? That they o'erpass my powers
Of proving proves them such:
Fact it is I know I know not something
Which is fact as much."

The CHAIRMAN (D. HOWARD, Esq., V.P.C.S.)—I am sure we shall all join in thanking Mr. Hassell for his valuable paper on a very important subject. It is, perhaps, difficult for some of us to realise how great a need there is for this sort of paper, beginning as it does at the beginning of the questions that are connected with religious thought. I cannot help thinking that the particular type of want of religious thought, which goes by the name of agnosticism, has a twofold cause. There is that weariness of mind which most of us have felt in these days, when so much has to be read and thought of, and which renders a great many subjects of human knowledge simply unknowable, because we have not time to study them; and thus to many the most important truths of all take, in their minds, the same position that the Zendavesta, or the early history of Roman law, or some of the more recondite problems of modern science, may take in the case of others, namely, that of things which life is really too short to enable them to attend to. It is, I think, a strange habit of mind that can be content with the less important, and leave the more important, subjects; but, still there are many such, and when people in that mental condition shelter themselves behind the theoretical objection, that, as the common expression goes, God is unknowable, it becomes necessary that, in order to deal with such persons, we should begin at the very beginning, as Mr.

Hassell has done. Of course, it is perfectly true that God is, in one sense, unknowable; but so are many of the other things we are, nevertheless, most certain of. Our knowledge of the majority of subjects is relative, and does not amount to absolute certainty. For instance, no one man thoroughly knows another; we none of us know anything of the forces of nature; no one pretends that he fully knows any of those sciences of which we are so proud; and yet, we have amply sufficient knowledge to regulate our lives. To nineteen out of every twenty persons, the idealistic hypothesis of Bishop Berkeley is something so absurd that it is very difficult to grasp; and yet, Bishop Berkeley was much nearer the mark, as a matter of absolute logic, than Mr. Herbert Spencer. It is of no use for us to shut our eyes to the fact that there is another and a more obstinate cause of agnosticism, and that this lies in the will, and not in the intellect. It is more and more evident to those who carefully inquire into the reason for the agnosticism of the present day, that the real difficulty lies in the will, and not in the intellect. It would seem that there is not that will on the part of the agnostics to know God's will, which is the condition precedent of the knowledge of Christ. I do not mean to say this in the way of harsh judgment upon those with whom I differ; but I do feel that it is our duty, in dealing with our fellow men, to lead them, if possible, to ask themselves—do they really want to understand this important question? It is of no use to try and teach science to a parcel of country labourers, if they do not wish to be taught, or, if they simply will not learn, because they do not care to know, and merely say, "what is that to oi"? That class of persons represents the type of which I was speaking just now, and I repeat, that it is useless to speak of anything to a man who has the best, or rather, the worst, of all reasons for not wanting to understand that which it would be exceedingly uncomfortable for him to comprehend and have a knowledge of. You do not suppose it is a very easy thing to make a man understand the law he has broken. The singular want of intelligence in a section of the British mind with regard to questions of our civil law, is wonderful to trace; but this want of intelligence is much more amazing in the case of the Divine law. When we consider the question of readiness to do God's Will, we must regard it on the widest possible basis. I do not mean that this defect of the will merely attaches to those who are outrageously breaking the Ten Commandments; because it may be an assertion of a more subtle spiritual pride, which really underlies a great deal of the agnosticism of the present day. I have already spoken of our late President, and I think we cannot but feel that, in his case, the absolute surrender of a free intellect was an act of will—that the anxiety to know and do God's will was the real foundation of his faith. Of course, one finds the same thing in every-day life. There is the obstinate impossibility of understanding which we so constantly meet with. When a person cannot afford to understand us, we have got the best comment we could have on agnosticism itself. If I may allude to a matter that is, at the present moment, somewhat prominent in most of our minds, I would refer to the singular difficulty that is found in the endeavour to make one political party understand what the other means. Now, this difficulty is, surely, not an intellectual one. There must be some action of the will involved in it; and, although, of course, each of us is profoundly convinced of the wilful obstinacy of the other party, nevertheless, I do think that these practical difficulties of every-day life furnish very important commentaries on the greater and more vital question contained in the paper wherein the author has so clearly treated a point of great importance. I now trust that some of those present will give us the benefit of their thoughts and suggestions on this subject.

Mr. W. Griffith.—Perhaps I may be permitted to make a few remarks on the able paper before us. I would first of all say that one of the difficulties started by Mr. Herbert Spencer is due to the way in which he plays with words, some of which he uses in more senses than one. For instance, I might point out that a thing may be unknowable in one sense, and yet knowable in another. We may not fully know the properties and attributes of each person or thing we come in contact with, and yet, although unknowable in that sense, either may be knowable so far as its existence is concerned. We are well acquainted with the existence of many things in chemistry, and yet we do not understand all the qualities impressed upon them, although as to the fact that the things themselves do exist, that is perfectly knowable to all. Therefore, I think Mr. Herbert Spencer may be to some extent correct when he states that the attributes of power, goodness, and wisdom, are not fully knowable or comprehensible; though, at the same time, that is a very different thing from saying that the existence of a Supreme Being is not knowable; because the existence of a thing may be knowable, although its attributes and qualities are not. I must say that I do not quite agree with those who say that the whole question is merely a matter of opinion, because there are many facts we may adduce that prove the existence of the phenomena we witness. We may regard the universe around us, and those who study the matter cannot fail to be convinced that it furnishes evidence of design. If, then, there is design, there must have been a designer. If there be a human soul with intelligence impressed on its faculties, there must of necessity have been some power possessed of intelligence which implanted that intelligence on our race. I think Mr. Herbert Spencer does, in one of his later works, admit that there is something greater—something beyond the universe which is distinct from matter—that there is, in fact, a great unknowable mind, though he is not able to understand and explain it, and cannot express its limitations in words. I believe I am correct in stating that in one of his later works this is so, and, if it be so, then the assertion that that greater one is unthinkable has nothing in it, and, in reality, falls to the ground. But the more serious part of the case (I speak as a barrister from the brief which the author of the paper has provided me) is that the young students mentioned by the author of the paper, and who it seems must be taken as types of a large class, not only profess themselves unable to understand what no one, Theist or Christian, professes himself fully able to understand—the existence of the attributes of a Supreme Being—but they also say they do not understand or comprehend the nature of responsibility. This, certainly, is a very important matter, and if we can show that they are in error we shall have made a great advance. It is useless for them to say that general ideas of responsibility do not exist at the present day. The existence of the law courts, the verdicts of juries, the sentences of the judges, show that there is general responsibility which all must admit to exist. There is responsibility under the common law, and it would be folly and absurdity to say there is no responsibility of any kind. Perhaps, however, they may say, "We do admit that; but there our knowledge terminates." This knowledge is certainly most important as far as it goes. Then we would further answer our students in this way: "You admit a responsibility recognised by law as to a great many duties, and you say the law enforces them all. Are there no duties beyond those which the law would enforce? Is there no such thing as gratitude, parental affection, filial affection? and do not these, in the existing relations of society, imply a certain responsibility on the part of its different members, one towards the other?" I really cannot see what answer they can give to this question. They may say they cannot understand all the grounds of responsibility; but that they must admit many grounds of responsibility do exist I can scarcely think will be denied. Bishop Butler, in his *Analogy*, compared the difficulties of revelation with those found in the existing state of things, and showed that such as were discernible in the one existed also in the other, and that, if we are to be consistent, we must not only give up revelation and our belief in supernatural causes, but we must also give up our belief in the analogy of existing facts, and in natural religion, which obtains amongst all societies and races of men. If this were to be the case, what, I ask, would be the result? It would be found in a complete chaos of thought, which has only to be mentioned in order to show its absurdity. There is no doubt that in the ordinary course of life we do get evidence which is not strictly mathematical and only amounts to probability; but, unless we act on probabilities in our customary business, that business could not be carried on. We are never sure of all our facts. We form an idea of what is most probable, and begin to act accordingly. If we were to act in reference to divine things in the same way as we do in human matters, we should see that we were no more unreasonable in the one than in the other. If persons will only consider the evidence put before them fairly, candidly, and impartially, they will see that there is sufficient evidence as to liability here and retribution hereafter, and upon that evidence they ought to act.

Mr. H. Cadman Jones.—The reference made to Mr. Herbert Spencer in page 64 gives, I think, an idea that may be worked out to some advantage. We may admit his proposition that the human mind cannot form an adequate conception of the universe as a whole, and that "we cannot conceive in its real form and magnitude even that small segment of the globe which extends a hundred miles on each side of us, much less the globe as a whole," that we are unable to comprehend this on account of its vastness. Just in the same way we are unable to conceive the distance of the sun from the earth. Ninety millions of miles is such an enormous distance that the mention of it conveys no distinct idea. I have tried to get a more distinct conception of what these figures imply by referring the matter to a comparison founded on the familiar idea of ordinary railway travelling. In a rough sort of way it about comes to this, that if there could be such a thing as a railway from this planet to the sun, and if a messenger had been sent thither by an express train for the purpose of carrying the news of Charles the First's execution, he would, by travelling at full speed all the way, be just about getting to his destination now. This, I think, gives a better idea of the enormous distance between us and the sun than can be got from any statement of mere numbers. The proposition comes to this, from the vastness of the earth we cannot form a distinct idea of it, and just in the same way we cannot form an adequate conception of God. Yet no one can say we have not a great amount of knowledge with regard to the world, its shape and size, as well as other matters. Our knowledge is, doubtless, imperfect; but it does not follow that we know nothing about it. This being so, it cannot be unthinkable. Moreover, we are obliged, from experience, to believe many things which, without that experience, we should pronounce unthinkable. One of the most familiar phenomena is the falling to earth of anything we may let drop. Now, supposing we had been brought up in a place—and it would not require omnipotence to produce such a place—where the effect of gravitation was neutralised, we should be unaware, unless magnetic and electric experiments had been made, of any instance of one body acting on another from a distance; and I am satisfied that, in that case, everybody would have said it was impossible and unthinkable that one body could act on another or exert any influence upon it in that way. The fact is, however, admitted, and few people think of its being a mystery; yet it was a mystery which puzzled so great a mind as that of Newton, and even now we cannot understand how the result is produced, and probably we never shall. At all events, it is not understood, and cannot be explained. Therefore I think it is an idle thing to say we cannot believe anything because we have no conception how it can take place.

Mr. Tyler (a Visitor).—Although I do not usually agree with Mr. Herbert Spencer, I was inclined to think, while Mr. Hassell was reading his paper, that I did concur with him, as the last speaker seems to have done, as to our not being able to form any conception of the world as a whole. I do not know whether Mr. Hassell has met with any captain who, having sailed several times round the world, has told him he could form such a conception. Perhaps he has; but, if so, I should be rather inclined to doubt the captain's testimony. The case is somewhat similar with regard to the conception of time. We can form some idea of a small space of time; but, when we have regard to a period of forty or fifty years, I cannot conceive of any one being able to conceive of that extended duration of time at once. At any rate, I could not do it. With regard to Mr. Hassell's paper, it goes over such a wide range, that if we were to attempt to discuss or criticise it we should be kept here till midnight.

THE AUTHOR.—I am sorry to disagree with my friend, Mr. Tyler. I maintain that a traveller at sea has abundant evidence that he is passing over a curved surface—a portion of a sphere; and, as he speeds his way, day by day, the same kind of evidence will be afforded, and, when he enters the port, after having circumnavigated the globe, the records of his "log" will proclaim the size of the sphere. So much, then, for the idea of space. Then, as to the idea of time; the study of history will, I think, help a person to grasp the idea of the extreme length of periods which have passed, say, for instance, a million of days. We can take the known present space of time included in one day, and, proceeding step by step backwards, we can go from day to day until we reach the period when the Jews were carried into captivity by Nebuchadnezzar, and then, counting backward again for sixty years, we come to a time which is represented by one million of days. Thus, then, we have a conceivable period, of great duration, and so I contend that the mind of man is able to grasp the conception of both space and time. With regard to the question of will, I have only to say that I have not touched upon that subject. I was anxious that my paper should be on the scientific, not on the theological side. My point is, that all men can have, if they like to look for it, abundance of evidence of the existence of a personal God, "in whom they live and move and have their being."

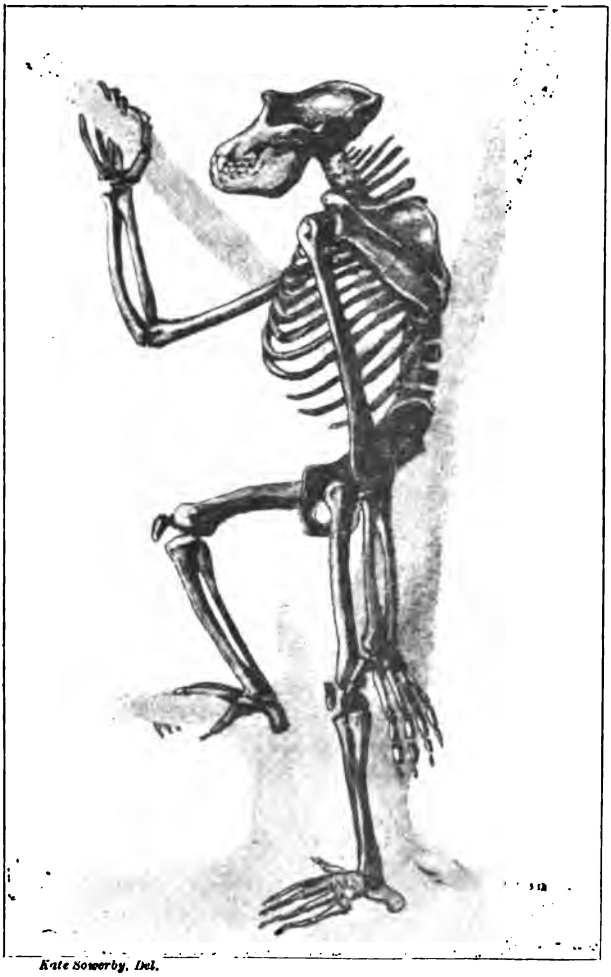
The following subject was then taken up:—

REMARKS ON THE STRUCTURE OF THE GORILLA.

By E. CHARLESWORTH, ESQ., F.G.S.

I SHOULD not have brought forward the subject of the gorilla had I not been led to do so by two different reasons. Only a few weeks ago two leading daily papers contained long and interesting articles on the gorilla. What led those widely-circulated papers to treat their readers to a history of the gorilla, was that a few days before one of those extraordinary animals had arrived at Liverpool alive, a fact which, of course, to all naturalists, was one of great importance; unhappily, that gorilla did not live more than forty-eight hours after its arrival, and it was owing to its death and the consequent lamentations that went on in the natural history world, that the papers I have referred to published those articles. The other reason why I have brought the subject forward is that the specimen of the gorilla I now produce—which is one of the most remarkable that has ever reached this country, as far as the skeleton is concerned—will be out of my possession to-morrow. It would have been sent off to-night to Southport, but, hearing of this meeting, I thought it would interest the members of the Victoria Institute to examine such a unique specimen. Another matter of painful interest connected with this subject has reference to the late Dr. Carpenter, of whose recent sad death I dare say most of my hearers are aware. More than half a century ago (in 1835), our life-long friendship began, as co-members of the General Committee, at a meeting of the British Association held at Bristol, and it was only the other day that the last address he gave before his fatal accident was delivered at the University of London, on this very skeleton. He then mentioned that, when the first skull of a gorilla reached this country, it was taken to the Bristol Museum, where he and other naturalists were certain they had in their possession a grand addition to what was called the quadrumanous fauna of the world—that is to say, the ape and monkey tribe. That skull remained in the Bristol Museum for a number of years before any announcement was made to the world of the nature of the prize they had obtained. In the course of time more specimens came over, and these fell into the hands of Sir Richard Owen, who wrote a series of most elaborate papers on this new and grand wild man of the woods, entitled "The Gorilla": these papers appeared in the transactions of the Zoological Society.

The next step in the history of the gorilla was the work by M. du Chaillu, in which some say he drew on his imagination when giving an account of his gorilla experiences. Yet we do know that as regards its structure—as shown by its skeleton—it is one of the most formidable creatures in existence. I do not know whether I might give you the degree of relationship the gorilla bears to the longer known orang, or the still longer known chimpanzee; but I will mention two or three special points on which it differs from man. In Darwin's theory of evolution, man is represented as the last forged link in a chain of life forms, starting from sea slugs or still lower organisms, and ascending step by step in the scale of organisation until the monkey and ape tribes are reached; and finally man. Now, in this evolution theory the gorilla must have a prominent place, seeing that so great an authority as Sir R. Owen considers the gorilla the most human like of the ape family. But the structural points in which the gorilla differs from man are very strongly marked, yet it must be borne in mind that, although these differences are very formidable and wide, there might still be a possibility that, as our knowledge of the gorilla has come to us after hundreds of years of research in Africa, there may be other forms of the ape family, still to be made known, that come even nearer to man than the gorilla, and that in the fossil state there may be found an ape still more close. I put that before you merely as a possibility. The main differences between the gorilla and man are these: in the first place, there is an enormous disproportion between the brain cavities in the skull of the gorilla and that of man. Looking at the skull of the gorilla in a casual way, you would be inclined to say it was nearly as large as that of a human being; but this approximation is deceptive, being principally due to the extraordinary thickness of the skull. When, however, you take it in sections, and compare the brain cavities of the two skulls, you will at once see the wide difference between the cranium of the human being and that of the gorilla. So wide, indeed, is that difference, that it is in the proportion of something about 40 to 100; or, in other words, if the brain of man weighed 100 oz., that of the gorilla would weigh near 40 oz. When we consider what the relation of brain to mind is, we are at once enabled to understand, from this one fact, the enormous difference there is between the gorilla and man. With regard to other points of structure, the teeth of the gorilla are of the same number as in man; but there is this essential difference, that what we call the eye or canine teeth are formidable tusks in the gorilla, while in the human being they are scarcely elevated above the rest of the teeth. Then, you have a structure in which the gorilla differs not only from man but from all the other ape and monkey tribes, and that



Kate Sowerby, Del.

SKELETON OF A GORILLA.

is, in the extraordinary crest which divides the exterior of the skull into two equal portions. This ridge stands up something like three-quarters of an inch, and the only other case I know of an animal that has any such crest, is that of the hyæna, which has a skull crust very like that of the gorilla, but not nearly so largely developed. Then, in addition to all this, there is in the gorilla an enormous development of what is called by anatomists the superciliary ridge—a strong ridge of bone above the eyebrows. The next great distinction between man and the gorilla is seen in the enormous length of the latter's arms. This I am able to illustrate by comparison, as I have here the shoulder-bone of a gorilla and the shoulder-bone of a human being. The latter, as you will see, is a complete pigmy contrasted with the former. Dr. Carpenter told us, in the address to which I have referred, that the gorilla had actually been known to wrest a gun from the hands of a hunter, put the barrel between its teeth, and while thus holding it bend the weapon double. Whether this feat upon the part of a gorilla rests on reliable evidence I cannot say, but the enormous strength of the gorilla, proved by the teeth, jaws, and other parts of the skeleton, will point to the possibility of this being done. Look at the enormous difference in the shoulder-blades of man and the gorilla; here are the shoulder-blades of each, and it will be remembered that these bones have a most important relation to the muscles which move the arms; therefore, when you consider what a strong man can do with his arms, you may easily imagine what a gorilla could do with a shoulder-blade like the one before you, and with the other bones of the arm in the same proportion. I do not know how many in this audience are of the medical profession; but perhaps there may be some present who are not aware that there is a single bone from the shoulder to the elbow, and then two bones from the elbow to the wrist. I produce the corresponding bones in the arm of man and the gorilla. If you contrast them, you will understand the prodigious power residing in the arm of the latter. M. du Chaillu brought over to this country a number of gorillas, some in skins and some as skeletons, and from them we can believe everything he said about their strength. If any of my hearers should have any questions to ask, I shall be happy, if the time will permit, to answer them.

The CHAIRMAN (D. HOWARD, Esq., V.P.C.S.).—I am sure we are all exceedingly indebted to Mr. Charlesworth for the interesting opportunity he has afforded us of seeing the remains of this wonderful creature, and of hearing his very able and lucid statement. It is very useful and instructive to be able thus to realise the remarkable characteristics of so extraordinary an animal, and to have them put before us under the guise of comparative anatomy, which is one of the most attractive sciences within the regions of human knowledge—though, unfortunately for me, owing to want of opportunity, "unknowable." It seems, to me that the wonderful adaptation of the gorilla to its own modes of life is most remarkable, while the contrast instituted between the skeletons of that animal and of the human being, as showing the adaptability of both to their different surroundings, is one of the most fascinating of the features of comparative anatomy. I suppose the bones of the thigh and leg are not so disproportionate as those of the arms, as between man and the gorilla ?

Mr. Charlesworth.—No ; the great disparity is in the arms. That we can readily understand, because the gorilla is arboreal. The actual height of the gorilla is said, by Du Chaillu, to be six feet, within three or four inches ; but I believe this is over-stated, and that the animal's real height is nearer five than six feet.

The Chairman.—I do not think the bending of a musket barrel by the gorilla is so unlikely a thing as some may suppose. I have seen a poker bent over a man's arm by a clever blow, and if the very small bone of a human arm will stand that, we need not wonder at the tremendous power possessed by the arm bones of the gorilla, with their corresponding muscles. It seems to me very strange how some of the old traditions are confirmed. In the case of the gorilla tribe, you have undoubtedly the traditional men whose heads grew beneath their shoulders.

The meeting was then adjourned.

NOTES ON THE ANTIQUITY OF MAN.

By the Editor.

This subject was specially treated on by Professor Hughes (in volume xiii. of the *Transactions*), by Dr. Southall (in volume xv.), and has been referred to by Mr. White (in volume xix.); and Mr. E. Charlesworth, F.G.S., has made remarks (p. 82, *ante*) upon the great dissimilarity between the structure of the gorilla and man, pointing out, foremost among other significant differences, first, the capacity of the brain, and secondly, the peculiar high crest to the gorilla's skull, which latter is also found in that of the hyena, but is absent in that of man. Mr. White, it will be remembered, pointed out that if the capacity of the brain of the anthropoid ape were taken at ten, that of man, even in his savage state, was twenty-six, or nearly thrice as much, a very important fact, when, as is known, any appreciable diminution in the brain of man is at once accompanied by idiocy. As regards the transmutability of species, Barrande's arguments against the theory, founded on the results of a life of research among the fossil strata, have not yet been overthrown; and modern investigation clearly points to the fact that one great bar to the transmutability of species lies in the refined and minute differences in the molecular arrangements in their organs.* Professor Virchow's remarks upon the subject are included in volume xix., and to them we may add an opinion, given by a high authority, that the whole British Museum Natural History Collection does not, as yet, contain a particle of evidence of the transmutation of species.

In regard to the ape descent of man, the following remarks are from the pen of the Rev. W. Guest, F.G.S.:—

"The latest of the books in *The International Scientific Series* (Kegan Paul & Co.) is on 'Anthropoid Apes,' by Professor Hartmann, of the University of Berlin. It is the last, and the most complete and exhaustive treatise on the subject, and by one recognised as a highly distinguished naturalist. The work shows that the differences between these apes and man are greater than the resemblances, that their intelligence is peculiar, but not greater than that of other animals, that they are interesting subjects of study, but can never become useful; that they cannot adapt stones to their personal use; they grow less like man as they become older, especially in the head; and that any close connection with man cannot be proved.

"Professor Hartmann thus sums up the argument: Man cannot have descended from any of the fossil species which have hitherto come to the notice of scientific inquirers, nor yet from any species of apes now extant. A supposed progenitor of our race is necessarily completely hypothetical, and all attempts hitherto made to construct even a doubtful representation of its characteristics are based upon the trifling play of fancy. Even if the assumed ancestral type should really be discovered in some geological stratum, yet research will have to overcome immense difficulties, if it is to explain the development of the understanding and speech, and the growth of independent local intelligence.

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* See Professor Dabney's paper further on in this volume.

"This latest outcome of natural science has great significance. Darwin maintained that 'the great principle of evolution stands up clear and firm,' and in the opinion of some, made light of the intelligence which believed that 'man is a separate act of creation.' But here is an investigator of European fame who affirms that so far as science has pursued inquiries among living species, or in fossiliferous rocks, no progenitor of man has been found. Evolution, then, is not 'clear and firm' in relation to man: he is exceptional in creation.

"The conclusion of Professor Hartmann touches a statement of Professor Huxley in his reply in the *Nineteenth Century* to the recent article of Mr. Gladstone in the same review. 'The horse,' says Mr. Huxley, 'is the last term of the evolution series to which he belongs, just as *Homo sapiens* is the last term of the series of which he is a member.' Although this cannot have been intended as a sophism, is it correct? There is no break in the series to which the horse belongs, but that is not the same with man. *Homo sapiens* is not 'a last term' of a known series, for 'a supposed progenitor of our race is a play of fancy.' It is proper to say that Professor Huxley's article is not at all marked by that contemptuous tone which formerly obtained among a certain school of scientists when referring to the first chapter of Genesis.

"As a picture of the way the earth was prepared for man, the opening chapter of the Bible still stands in its beautiful and unique sublimity."

As regards the early history of man, it will interest many to read what Sir J. William Dawson, K.C.M.G., F.R.S., has said in a paper published this year, 1886:—*

"Geology has divided the whole chronology of animal life on the earth into four great periods: Eozoic, Palæozoic, Mesozoic, and Kainozoic. In the three first of these periods not only are remains of man absent, but we find no examples of those higher animals which are most nearly related to him in structure. It is, therefore, to the last of these periods, the Tertiary or Kainozoic, that we must look for human remains.

"This, the last of the four great 'times' of the earth's geological history, was ingeniously subdivided by Lyell, on the ground of percentages of marine shells and other invertebrates of the sea. According to this method, which with some modifications in details, is still accepted, the *Eocene*, or dawn of the recent, includes those formations in which the percentage of modern species of marine animals does not exceed 3½, all the other species found being extinct. The *Miocene* (less recent) includes formations in which the percentage of living species does not exceed 35, and the *Pliocene* (more recent) contains formations having more than 35 per cent. of recent species. To these three may be added the *Pleistocene*, in which the great majority of the species are recent, and the *Modern*, in which all may be said to be living. With respect to the higher creatures, the ordinary quadrupeds, such percentages do not apply. These animals begin to appear in the Eocene, but no recent species occur until we reach the later Tertiary or Pliocene. The Eocene thus includes formations in which there are remains of mammals or ordinary land quadrupeds, but none of these belong to recent species or genera, though they may be included in the same families and orders with the recent mammals. This is a most important fact, as we shall see, and the only exception to it is that Gaudry and others hold that a few living genera, as those of the dog, civet, and marten, are actually found in the later

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* *Points of Contact between Revelation and Natural Science*, R. T. Soc.

Eocene. The Miocene includes formations in which there are living genera of mammals, but no species which survive to the present time. The Pliocene and Pleistocene show living species, though in the former these are very few and exceptional, while in the latter they become the majority.

"With regard to the geological antiquity of man, no geologist expects to find any human remains in beds older than the Tertiary, because in the older periods the conditions of the world do not seem to have been suitable to man, and because in these periods no animals nearly akin to man are known. On entering into the Eocene Tertiary we fail in like manner to find any human remains; and we do not expect to find any, because no living species and scarcely any living genera of mammals are known in the Eocene; nor do we find in it remains of any of the creatures, as the anthropoid apes for instance, most nearly allied to man. In the Miocene the case is somewhat different. Here we have living genera at least, and we have large species of apes; but no relics of man have been discovered, if we except some splinters of flint found in beds of this age at Thenay in France, and a notched rib-bone. Supposing these objects to have been chipped or notched by animals, which is rendered very unlikely by the results of the most recent investigations, the question remains, was this done by man? The probability on general gronnds of the existence of men at this period is so small, that Gaudry and Dawkins, two of the best authorities,* prefer to suppose that the artificer was one of the anthropoid apes of the period. It is true that no apes are known to do such work now; but then other animals, as beavers and birds, are artificers, and some extinct animals possessed higher powers than their modern representatives. But if there were Miocene apes which chipped flints and cut bones, this would, either on the hypothesis of evolution or that of creation by law, render the occurrence of man still less likely than if there were no such apes. For these reasons neither Dawkins nor Gaudry, nor indeed any geologists of authority in the Tertiary fauna, believe in Miocene man.

"In the Pliocene, as Dawkins points out, though the facies of the mammalian fauna of Europe becomes more modern, and a few modern species occur, the climate becomes colder, and in consequence the apes disappear, so that the chances of finding fossil men are lessened rather than increased, in so far as the temperate regions are concerned. In Italy, however, Capellini has described a skull, an implement, and a notched bone, supposed to have come from Pliocene beds, and which are preserved in the Museum of Florence. They are all, however, of so recent types that it is in every way likely they have become mixed with the Pliocene stuff by some slip of the ground. As the writer has elsewhere pointed out† similar and apparently fatal objections apply to the skull and implements alleged to have been found in Pliocene gravels in California. Dawkins further informs us that in the Italian Pliocene beds supposed to hold remains of man, of twenty-one mammalia whose bones occur, all are extinct species except possibly one, a hippopotamus. This of course renders very unlikely in a geological point of view the occurrence of human remains in these beds, and up to this time no such discovery has been certainly established.

"In the Pleistocene deposits of Europe—and this applies also to America—we for the first time find a predominance of recent species of land animals. Here, therefore, we may look with some hope for remains of man and his works, and here, accordingly, in the later Pleistocene or early Modern, they are actually found. When we speak, however, of Pleistocene man, there arise questions as to the classification of the deposits, which it seems to the writer that some of the leading geologists have not answered in accordance with geological facts, and a misunderstanding as to which may lead to serious error.

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* *Les Enchaînements du Monde Animal: Early Man in Europe.*

† *Fossil Men*, 1880.

"The geological formations of the Pleistocene period are, for the most part, superficial gravels and clays, and deposits in caverns, and it is somewhat difficult, in many cases, to ascertain their relative age. We are aided in this, however, by certain ascertained facts as to elevations and submergences of the land, and as to climatal conditions in the northern hemisphere. There was at the beginning of the Pleistocene what has been called a continental period, when the land of the northern hemisphere was more extensive than now, and there seems to have been a mild climate. This was succeeded by a period of cold, the so-called glacial period, in which the land became diminished in extent by submergence, and the climate became so severe that snow and ice prevailed over nearly all the temperate regions of Europe, Asia, and North America. After this there was a second continental period of mild climate, succeeded by another submergence of limited duration, and then the continents acquired the forms which they still retain. These chronological points, important in reference to the correlation of geology and the Bible, are represented in the following table :—

"*The Pleistocene and Modern in the Northern Hemisphere with reference to the Introduction of Man.*' (*In descending order from newer to older.*)

"*Modern*, or Period of Man and Modern Mammals :—

"*Recent Age.*—Continents at or nearly at their present levels.—Existing races of men and living species of mammals in Europe.

"*Post-glacial or Second Continental Age.*—Land more extensive than now. Climate temperate. Man represented in Europe and Western Asia by races now extinct, and contemporary with the mammoth and other great mammals also extinct, but also with modern species. This was terminated by a submergence fatal to men and many mammalia, and covering the land with gravel and silt.

"*Pleistocene*, or Period of extinct and a few recent Mammals :—

"*Later Pleistocene*, or Glacial Age.—Cold climate and great submergence of land in northern hemisphere.

"*Early Pleistocene* or *First Continental Age.*—Land very extensive, and inhabited by many mammals now extinct. Climate temperate.

"It will be observed, with reference to the above table that the earliest certain indications of man belong to the modern period alone, and that this modern or human period is divided into two portions by a great submergence, in which certain races of men and many mammals perished, and after which the geographical conditions of the northern hemisphere were considerably modified. I have not used the terms historic and pre-historic in the above table, because, while in most countries the period of written history covers only a locally variable part of the recent age, in other countries it extends back into the post-glacial, which thus becomes the antediluvian period. I have, however, elsewhere proposed the name Palæocosmic for the men of the post-glacial age, and Neocosmic for the men of the recent ages, and shall use these terms rather than Palæolithic and Neolithic, since these last refer to forms of implements which, though locally of great antiquity, exist in some places up to the present day. The men of the post-glacial age have also been called men of the gravels and caves, and the men of the mammoth and reindeer ages, and they resemble in physical features the modern Turanian races of Northern Europe, Asia, and America. We might, with reference to the Bible history, call them antediluvian men, but the evidence of this will appear in the sequel. In the meantime we may observe that the testimony of the earth coincides with that of the Bible, in representing man as the latest member of the animal kingdom, the last-born of animals.

"The most important point with reference to any parallelism between the geological history of man as tabulated above and the Biblical record, is to ascertain what absolute value in time can be assigned to the several ages known as post-glacial and recent, or, in other words, how long ago it is since the glacial period terminated. So vague are the data for any calculation of this kind, that the estimates of the date of the glacial period have ranged from hundreds of thousands of years down to a very few thousands. The tendency of recent investigations has been to discard the higher estimates and to bring the close of the glacial age constantly nearer to the present time. The absence of any change in invertebrate life, the small amount of erosion that has occurred since the glacial age, and many other considerations, have been tending in this direction. I may refer to only one criterion, the importance and availability of which were long ago recognised by Sir Charles Lyell. This is the recession of the Falls of Niagara from the shores of Lake Ontario to their present position. This recession is effected by the cutting back of beds of limestone and shale; and the resulting gorge, about seven miles in length, cuts through the deposits of the glacial period, proving, what on other grounds would be obvious, that the cutting began immediately after the glacial age. When Lyell estimated the time required, the rate of recession of the Fall was supposed to be one foot per annum. It is found however, by the results of actual surveys, to be three feet annually. Lyell's estimate of the time required was thirty thousand years. The new measurement reduced this to one-third, and further abatements are required by the possibly easier cutting of the first part of the gorge, by the fact that a portion of it of uncertain amount above the "whirlpool," had been cut at an earlier period and needed only to be cleared out, and by the probability that, in the early post-glacial period there was more water in the Niagara River than at present. We thus have physical proof that the close of the glacial submergence and re-elevation of the American land could not have occurred more than about eight thousand years ago. It follows that the ordinarily received chronology of about four or five thousand years for the post-diluvian period, and two thousand or a little more for the ante-diluvian period, will exhaust all the time that geology can allow for the possible existence of man, at least in the temperate regions of the northern hemisphere. Facts recently ascertained with reference to the delta of the Nile,* lead to similar conclusions for the oldest seats of human civilisation. Whatever demands may be made by philologists, historians, or antiquaries, or by the necessities of theories of evolution, must now be kept within the limits of facts such as those above referred to, and which are furnished to us by physical geography and geology. These facts must also lead to considerable revision of the excessive uniformitarianism of one school of English geologists, and to explanations more reasonable than some which have been current as to the deposition and age of superficial gravels and similar deposits. When all these points have been adjusted, it will be found that there is a sufficiently precise accordance between science and Bible history with regard to the antiquity and early history of man.

The reader will find a fuller report of the results of the surveys of Niagara Falls, and explanatory diagrams, at page 90 of volume xix. of the Victoria Institute *Journal.*

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* "Egypt and Syria," in *Bypaths of Bible Knowledge.*

ORDINARY MEETING, JANUARY 4, 1886.*

THE REV. R. THORNTON, D.D., VICE-PRESIDENT, IN THE CHAIR.

The Minutes of the last Meeting were read and confirmed.

The CHAIRMAN then said: I have the pleasure of calling on Mr. St. Chad Boscawen, who is well known among Assyriologists, for his learning and research, to read his paper on "The Historical Evidences of the Migration of Abram." I think Mr. Boscawen has very properly used the designation "Abram," because the migration to which the paper refers took place, as we all know, at a time when he was called "Abram," and not "Abraham."

The following paper was then read by the Author:—

HISTORICAL EVIDENCES OF THE MIGRATION OF ABRAM.—By W. ST. CHAD BOSCAWEN, ESQ., F.R.Hist.Soc.

NOT many years ago it would have been considered almost impossible to deal with the subject of my paper this evening, and two strong objections would have been urged against its adequate treatment. In the first place, to many it would have seemed irreverent thus to place the Scriptures in comparative contact with secular records, and it would have been urged that to do so threw at once an onus of doubt upon their authenticity. A second, and still more forcible objection could then have been advanced, that provided that such a comparison was proposed, where were the monuments by which the Hebrew records were to be tested? The few traditions preserved by the Greek writers, Herodotus and Ctesias, were so brief and so full of late oral tradition and second-hand caricatured history of the ancient empires of the East that they could not throw any light upon the birth of the Hebrew nation. In like manner the writings of Josephus, the Greco-Hebrew historian, were too essentially based upon the Scriptures themselves to be admissible as evidence. If, however, thirty years ago, it was impossible to institute such a comparison, and to produce evidence which would tend to prove the migration of Terah and his descendants to be a great and important historical event, such is no longer the case.

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* The large number attending this meeting rendered it necessary to hold it at the Hall of the Society of Arts, which is close to the Institute's House.

Only of late have the grave-mounds of the land of Chaldea yielded up the monuments and inscriptions which the decipherer has revivified by his almost magic skill, and breathed into their long silent characters the breath of life, forcing them to become living witnesses in the cause of truth.

The discoveries made by Sir Henry Layard and M. Botta in Nineveh, followed by those of recent years resulting from the explorations of Mr. Hormuzd Rassam in Chaldea, have given to the history of the East a retrospective enlargement far beyond the expectations of the most ardent believer in the resurrection of the past.

When we remember that this series of historic records, won from the bosom of the earth, extends back to a period of twenty-five centuries before the Christian era in almost unbroken sequence, and that further still we find isolated and epoch-marking records, we may naturally expect that points of contact may be found between the Hebrew writings and these monuments, and that they will afford us the evidence we require.

Before proceeding to deal with these valuable stone commentaries which come from the dark storehouse of centuries, as new and illuminating lights, it is necessary to glance at the Hebrew account of the migration of Abram to see upon what points we have to obtain evidence to emphasise more strongly for those who doubt its accuracy, the historical character of the events, and their agreement with contemporary testimony.

The points we require to treat of are :—

1.—That the ancestors of Abram belonged to the Semitic branch of the human family (Gen. xi. 10–27).

2.—That their original home was on the east side of the Euphrates (Josh. xxiv. 2).

3.—That the dwelling-place of Terah was in Ur of the Casdim or Chaldeans, that is, in Chaldea (Gen. xi. 31, and Neh. ix. 7).

4.—That the first step in the migration was from Ur to Kharran, in North Mesopotamia, and that all the tribe of Terah took part in that migration (Gen. xi. 31).

5.—That while Abram journeyed still further to Canaan (Gen. xii. 5), the rest of the family of Terah remained in Kharran and established a colony there (Gen. xxiv. 10–15; xxix. 4).

6.—That at the time of the leaving of Chaldea, or shortly after, that country was ruled by a confederation of Mesopotamian tribes; at the head of which was the King of Elam (Gen. xiv.).

With these points before us, therefore, we turn to the monuments and inscriptions from Chaldea. The most ancient inscriptions of the land are the work of the ancient Akkadians, or mountaineers, who had come down from the mountains of the East to the plains of Chaldea, and brought with them the germs of civilisation and the first elements of the Cuneiform writing. A record of this migration is preserved in the Hebrew writings: "And it came to pass as they journeyed in the East, they found a plain in the land of Shinar and dwelt there" (Gen. xi. 2). Turning to the Cuneiform inscriptions, we meet with a most emphatic endorsement of this statement, both in tradition and legend, and by evidence of a still more solid character. In the legends and traditions of the earliest inhabitants of Chaldea, as preserved in the Deluge Tablet, and in the hymns and Magical litanies, we find all the traditions of origin centre round the "Mountain of the East," the "Mountain of the World," the "Mountain of the Nations," to which evidently reference is made by the Prophet Isaiah (xiv. 13): "I will sit upon the Mountain of Congregation in the uttermost parts of the North" * (R.V.). That these people were the inventors of the Cuneiform mode of writing is shown by an examination of the characters composing the syllabary. The Cuneiform writing, like the Egyptian and Hittite characters, was originally pictorial, and we can see in these characters—that is, in the more primitive forms—a picture of the home and surroundings of the people who invented them. The pictures would be derived from the objects around, as an Esquimaux would draw a reindeer, but not a lion; a bear, but not a tiger; fir-trees, but not palms. So, when we turn to this ancient series of pre-historic sketches placed before us in the earliest forms of the Cuneiform characters, we at once see that they must have been depicted in a locality *different* from Chaldea—a more northern and mountainous one.

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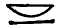
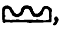
* The arrangement of the cardinal points in Chaldea was not in true correspondence with the magnetic points, N., N.W., S., S.E., E., N.E., W., S.W. The writer, therefore, refers here to the north-east in the expression north.

Thus the sign for mountain and country are synonymous, showing that the country, *par excellence* the home, was a mountainous one. As an illustration of this, we may show how this pictorial representation of land was carried out in the pictorial systems of the Egyptians and Hittites. Thus the home royalty of the flat plains of the Nile valley was represented by the sign  NEB-TA, "lord of the two lands," —— being the ideograph of country; but the sign for a foreign land was , a picture of mountain-peaks similar to that Hittite group which Professor Sayce identifies as the sign for country. In the fauna of the land we find individual ideographs for the bear and the wolf, but not for the lion, tiger, and jackal, which were common in Chaldea; and still more important is the fact that the compound ideograph for camel denotes an animal with two humps—that is the species of Upper Asia, as distinct from the Arabian species. In the flora we find the pine and cedar, but not the palm or the vine; while the earliest form of the house or dwelling was a cave. All these facts tend to show that if the Cuneiform writing did undergo a considerable enlargement and modification in Chaldea, yet, at any rate, the first elements were invented in a land differing in many respects from the delta of the Tigro-Euphrates valley. The language of these first inhabitants is known to us from numerous inscribed bricks and tablets, and the labours of Dr. Paul Haupt and the late M. François Lenormant have elucidated the nature of the grammar and vocabulary, showing it to differ entirely in both of these important features from the Semitic families. The mode of reading the characters from left to right, the use of ideographs and polyphones, all point to the non-Semitic origin of the writing, and this fact is stated most clearly by so great an authority on all relating to Semitic languages as M. Ernest Renan, who says, "No one in the present day can doubt that this (Turanian) civilisation possessed, and most probably created, the writing called Cuneiform,"—that is, he adds, if we take the word Turanian as a synonym for that which is neither Aryan or Semitic.

While the Chaldean inscriptions show, undoubtedly, a Turanian civilisation at the base of the culture of the nations of the Tigro-Euphrates Valley, they also reveal the important fact that at a very early period, tribes of Semitic nomads had come and settled in the land and had adopted the Cuneiform mode of writing which they found in use among their Akkadian countrymen.* This borrowing must have taken place at a very early period, for as early as B.C. 3750, the kings of North Chaldea wrote their inscriptions in Semitic Babylonian, thus affording proof of the existence of a Semitic population in the land. In the British Museum there is a small ovoid of pink and white marble, bearing an inscription of Sargon I., King of Agadhe, or Akkad, one of the quarters of the city of Sippara, the Sepharvaim of the Bible, in North Chaldea; and an inscribed vase belonging to Naram-Sin, the son of this ruler, was found by M. Fresnel, but unfortunately lost in the Tigris; also a third inscription of this period is the seal of IBNI SAR, the tablet-writer of Sargon I. This inscription, of which I give a facsimile, is one of particular interest, as showing the importance of the scribe caste even at this early period. All of these inscriptions are written in very archaic characters, quite in agreement with their great antiquity.* The inscription upon the seal of Ibni-Sar reads, when transcribed into modern Babylonian characters,

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* A curious and important record of the relative position of the homes of the Semitic and non-Semitic elements in the population of Chaldea is pre-

1. 𒀭 𒊬 𒂵 𒉌.
AN - SAR - GA NI
To Sargon

2. 𒈗 𒈛.
SAR LUKH
the good King ?

3. 𒈗.
SAR
King

4. 𒀀 𒂵 𒁲 𒆠.
A - GA - DHE
King of Agadhe (AKKAD)

5. 𒅁 𒉌.
IB - NI -
Ibni -

6. 𒈗.
SARRU
Sarru

7. 𒁾 𒊬.
DUP - SAR
the scribe

8. 𒀴 𒋗.
ARAD - SU
his servant.

This word DUPSAR or TUPSARRU, literally "Tablet-writer," was of Akkadian origin, being composed of DUP tablet and

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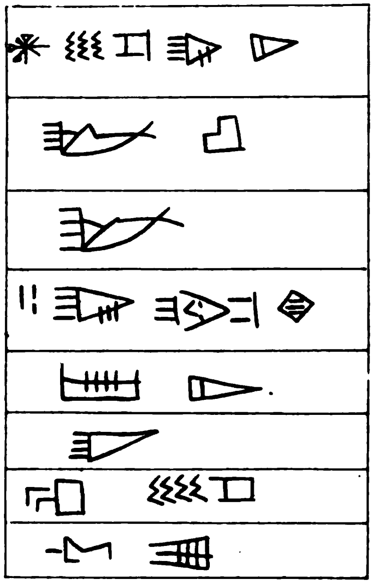
served in the names of the cardinal points. From a small astronomical tablet we learn that the North-East was the land which the Akkadians placed behind them, the land which they left in their journey from the East; while the Semites called the West Akharri—the "Hinterland" of the Germans—pointing to Arabia as their home.

* The date of these inscriptions rests upon the statement, twice repeated in cylinder incriptions, of Nabonidus, King of Babylon (B.C. 555–538), that in his restoration of the temple of the Sun-god he found in the foundations the memorial record of Naram-Sin, the son of Sargon, which for 3,200 (𒐈 𒌋𒈨 𒐖 𒈨 3 × 10 × 100 + 2 × 100) years none of the kings his predecessors had seen (W.A.I. v. 64, ii. 61). In a second cylinder (W.A.I. v. 65, i. 38) the king also speaks of this discovery. In the former of these records the king speaks of the Kassite king Sagarakteyas, son of Kudur-Bel, or more probably Kudur-Kharbi, whose reign, he says, was 800 (𒐍 𒈨) years

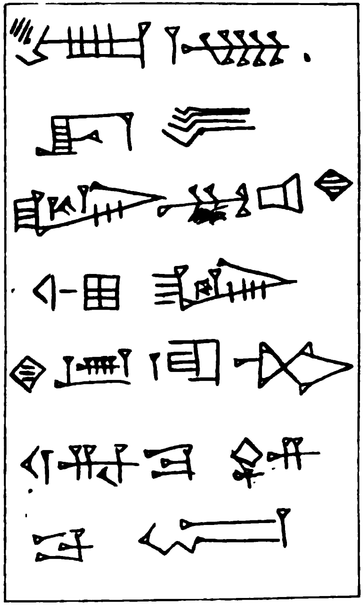
EARLY SEMITIC INSCRIPTIONS.

Sargon. B.C. 3750.



Wyman & Sons, litho.

Dungi. B.C. 2500.



SAR to write, borrowed by the Semites, and is found in the form טִפְסָר in the passages—such as in the difficult passage in Jer. li. 27, where the A.V. has "appoint a captain," and the R.V. "marshal." We should perhaps now read "a scribe," one who should write the summons to the nations against Babylon. And also in Nahum iii. 17, "Thy scribes are as the swarms of grasshoppers," a most pointed allusion to the vast number of scribes attached to the royal library and temple-schools of Nineveh. The name of this scribe is pure Semitic, both words being found in Hebrew "the king has made." These two inscriptions of Sargon and that of Naram-Sin* his son are ample evidence of the existence of a people speaking a dialect akin to the Hebrew as early as the thirty-eighth century before the Christian era. From time to time in various inscriptions we meet with kings or officials bearing Semitic names. About B.C. 2500 we have another inscription of great value in a royal record of Dungi, King of Ur, and from this time onward the inscriptions increase in number and importance. This inscription of Dungi, of which I give a facsimile, is engraved on a small tablet of black basalt, and is now in the Louvre. In this inscription the king claims the title of *Sarru daluv*, "Strong king,"† and *Sar kiprativ arbaiv*, "King of the four quarters," and states that he was the builder of the temple of the Moon-god in the city of Ur. This King Dungi was one of three important rulers in southern Chaldea. He was the son of Ur-bahu, "Servant of Bahu"—whose name has been before read Urukh, Urbagas, and Likbagas—and under him there ruled a very important viceroy, Gudea, in the city of Sergul or Lagas, the ruins of which are marked by the mounds of Tello on the Shat-el Hie, where M. de Sarzac has recently made such important discoveries.

From this time onward the names of Semites appear among the rulers of various city kingdoms, and such names as Gamil-Adar, "The favoured of Adar," Ismi-Dagan, "Dagan the hearer," Sin-Iddina, "The Moon-god has given," &c., are

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before his time, that is, B.C. 1350, a date which is confirmed by the tablet of synchronous history. In this cylinder also the names and genealogies of Shalmaneser III. (B.C. 858) and Assurbanipal (B.C. 668) are given correctly (col. ii. 3, 4). So that we may conclude that the writer of the inscription had historical records to refer to when making these statements as to the remote antiquity of these inscriptions.

* Naram-Sin means "beloved of Sin," from root, רחם, Heb. רחם, to love. Naram is given as a synonym of Dudu, the same as Hebrew David, "beloved."

† This may be *idluv*, as the archaic forms of DA and ID are very much alike; it would then read Sar *idluv*, "hero King."

found on the bricks and tablets, indicating the gradually-increasing power of the Semitic element in the population.

How long this dynasty of kings of Ur, of which Urbahu was the founder, lasted, it is difficult to say, but it was certainly seriously reduced in power by the invasion of Chaldea in B.C. 2280 by Kudur-Nakhundi, King of Elam, who sacked the city of Uruki, or Erech, the then capital of the country, and carried the image of Nana, the protecting goddess, away to the city of Susa, where it remained until recovered by Assurbanipal seventeen centuries later.

Now at this period in Babylonian history we come in contact with a most highly important series of Babylonian documents—namely, the chronological lists discovered by Mr. Pinches, and which for the first time enable us to arrange the kings in a systematic order.*

These tablets give a dynasty of eleven kings ruling at 𒁷 𒌁 𒆠 DIN-TIR (KI), or Babilu, from B.C. 2232–1969, together with the length of their reigns and their relationship to one another:—

DYNASTY OF BABYLONIAN KINGS (B.C. 2232-1969).

No.	Date B.C.	Name.	Relationship.		Language.	Remarks.
1.	2232	Su-mu-abi†		15		
2.	2217	Su-mu-la-an†		35		
3.	2182	Zabu	Son of above	14	Semitic	Mentioned in Cylinder of [Nabonidus.
4.	2168	A-bil-(Ilu) Sin	,,	18	,,	
5.	2150	(Ilu) Sin-Mu-bal-lidh	,,	30	,,	
6.	2120	Kha-am-mu-ra-bi	,,	55	,,	Monuments in B.M. and [Louvre.
7.	2075	Sa-am-su-i-lu-na	,,	35	,,	Monuments in B.M.
8.	2040	E-bi-su-m	,,	25	,,	
9.	2015	Am-mi-di-ta-na†	,,	25		
10.	1990	Am-mi-di dug-ga†	,,	21		
11.	1969	Sa-am-su di-ta-tam†	,,	31		

The importance of these dates is very great, as the 273 years of their reigns cover the area embracing the very period we have under consideration, as the dates given for the birth of

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* *Proceedings of the Soc. Bib. Arch.*, January 11, 1881, p. 42.

† The reading of these names seems uncertain. The first elements in Nos. 1, 2 seem to be to be *sumu*, a name, but the rendering of the second is very obscure. The first may read, *Sumu-abi*, "The name of his father." In Nos. 9, 10, the first element is probably the Semitic *ammu*, "family, tribe." The Hebrew עַם, as in W.A.I. v. pl. 44, col. 1, No. 22. *Ammi-diduga* is expressed by *Kimtum Kittim*, "the family is legitimate." *Samsu* in No. 11 is probably the same as in No. 7, the Sun-god; but the termination of the name is difficult, probably a compound ideograph. Some valuable notes explanatory of these names are found in Dr. F. Delitzsch, *Die Sprache der Kossäer*, Leipsig, 1884, pp. 64–75.

Abram in the Bible chronology are: Usher, B.C. 1996; Hales, B.C. 2153; and for the arrival in Canaan, Usher, B.C. 1921; Hales 2078; and we shall see, from the comparison of these dates with the monuments of the period, that the chronology of Hales is in fairly close agreement with the records.

The History of Chaldea B.C. 2500 to B.C. 2000.

In this important period, within which falls the exodus of the family of Terah, the history is naturally not given with that clearness of detail which is so valuable a characteristic in the history of the later empires of Assyria and Chaldea. Nevertheless, there are not wanting certain indications of the course of events.

In the days of Gudea, the viceroy of Sergulla, who ruled in that city under his lord, Dungi, King of Ur, the Chaldeans appear to have had considerable influence on surrounding lands. In one of his inscriptions, which is upon a statue in the Louvre, he speaks of sending to the land of Magan or Makan, for "hard stone" from which to carve his statue. The stone from which this statue is cut is hard green diorite, which could not be obtained from any nearer spot than the Sinaitic peninsula—certainly not in Chaldea. The connexion between the land of Sinai, with its copper and turquoise mines and stone quarries, and the empire of Chaldea was established at an early period. The land of Makan has been identified by both Professor Sayce and M. Lenormant, with the Mafka or turquoise land, the Sinaitic peninsula of the Egyptians, and in the inscriptions it is called the land of copper and the blue stone.* The mines in the Sinaitic peninsula were worked as early as the days of Senoferu of the third dynasty, whose date, according to Brugsch, was B.C. 3766, and the neighbourhood abounds in excavations votive stelæ, and the *débris* of ancient workings. Naram-Sin, whom we have already spoken of, in his inscription on the vase discovered by M. Fresnel, claims the titles of King of Apirakh and Magan, that is of part of Elam, east of the Tigris and of the land of the Sinaitic peninsula.

In another inscription on the large statue this King Gudea

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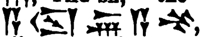
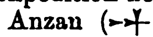
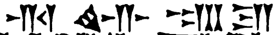
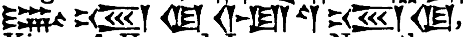
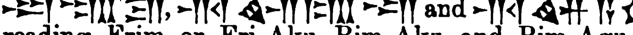
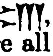
* The stone is called , TAG-SA, "the blue stone," by the Akkadians, and by the Assyrians , *Aban Sâmu*, "the blue stone," the אֶבֶן הַשֹּׁהַם of Gen. ii. 12, which our A.V. renders "onyx," and the R.V. gives the strange rendering of "beryl." The meaning of the word is quite clear, as it is applied in Chaldean hymns to the sky and the sea. In the same way we may identify the Akkadian , TAG-GIR, that is, the "cutting or piercing stone," which is rendered by *semiru*, with the Hebrew שָׁמִיר "diamond."

speaks of an expedition he sent to ravage the land of Anzan. This land of Anzan () was the district of Elam, watered by the Ulai—the modern Karun—and its tributary the Disful, and had for its capital the city of Shusan, the region which in after-time formed the kingdom of Cyrus before he became ruler of Media and Persia. Another name of this region in the inscriptions appears to have been Aipir, or, in the inscriptions of the Achæmenian age, Khalpirti, with the prefixed guttural and inserted labial. This must be the same as the Apirak mentioned in the inscriptions of Naram-Sin. The constant wars between the States of Ansan or Elam and Chaldea led to the overthrow of many dynasties in either land, and it was no doubt on account of one of these campaigns that Kudur-Nakhundi invaded Chaldea in B.C. 2280, and conquered southern Chaldea, with its capital city of Erech—the ruins of which are marked by the mounds of Warka.

This conquest of Chaldea by the King of Elam was a very important event, and very closely connected, we shall see, with the migration of Abram. In B.C. 2280 this Elamite dynasty was established by Kudur-Nakhundi, and early in the reign of Khammurabi, the seventh king in the Babylonian dynasty I have already given, we have this date given on a tablet. "In the month Sebat, 23rd day, the year Khammurabi the King, in the service of Bel, favourably marched. The lord of Yamutbul and King Rim-Aku he defeated." (W.A.I., iv. 37, No. 22.) The tablet therefore, I believe, records the overthrow of the dynasty of Elamite rulers in Chaldea, and so we must place our dynasty between B.C. 2280 and 2120, that is a period of a hundred and sixty years. The tablets afford us some more information as to this Elamite dynasty and their rule. In another tablet dated in the reign of this king Rim-Aku, , he is called King of , UR-UN(KI) U UD-UN-(KI), King of Ur and Larsa. Now the marble cylinder of this king, which I give a translation of at the end of this paper, commences with the words "To the Goddess of Zariuna, his lady ERI-AKU, King of Larsa (UD-UN-KI) for his life, and the life of his father Kudur-Mabug." This text, therefore, gives us the name of the father of Eri-aku or Rim-aku, and on the bronze statue in the Louvre dedicated by these two kings, Kudur-Mabug has the title of Lord of Yamutbul, a district of Elam. We may therefore identify Rim-aku or Eri-aku and his father Kudur-Mabug as the two kings defeated by Khammurabi. In his valuable guide to the Koyunjik Gallery of the British Museum (p. 8) Mr. Pinches says, "Khammurabi ruled in Babylon, whilst Kudur-Mabug and Rim-Aku, his son, governed in the south and east of the country; but being a more vigorous ruler and warrior he defeated their forces and made himself ruler of the whole of Babylonia." Mr. George Smith was of the same opinion in his *Assyrian Discoveries*, p. 233, and so is Professor Sayce (*Fresh Lights from the Monuments*, p. 47). Mr. Smith has very clearly proved that the names  and , reading Erim or Eri-Aku, Rim-Aku, and Rim-Agu were all the name of the same king (*Notes on Babylonian and Assyrian History*). Turning now to the Hebrew records we read that shortly after the migration of Abram to Canaan, a very important event in Western Asiatic history took place—namely, the invasion of the land of the west, that is Syria, by a confederation of Mesopotamian kings, headed by Chedorlaomer, King of Elam (Gen. xiv.). The passage is so remarkable, even in its wording, that it must be quoted in full. "And it came to pass in the days of Amraphel, King of Shinar, Arioch, King of Ellasar, Chedorlaomer, King of Elam and Tidal, (Sept.) Targal, King of Nations (Goim) that they made war with the Kings of the plain of the Dead Sea;" and again, "Twelve years they served Chedorlaomer, and the thirteenth they rebelled. And in the fourteenth came Chedorlaomer and the kings that were with him." The historical character of this passage is not to be doubted, and so great an authority as Ewald thus writes, "In the oldest extant record of Abram (Gen. xiv.) we see him in the clear light of history, the separate rays of which were nearly all gathered in focus, and we only lament that its brevity does not allow us to collect many more such rays, and from them to form a connected history of this hero of the remotest past." *

Now let us apply this valuable fragment to the monumental history we have collected, and we shall find it productive of some very important results.

The name Eriaku could only be written in Hebrew characters as אַרְיוֹךְ Arioch, and would correspond to the name of the King of Elassar, a name which closely resembles the name of Larsa, the city of which Eriaku was King. The father of Eriaku was Kudur-Mabug, King of Elam, and in his inscriptions he claims the title of ADDA MARTU, literally, father of the land of the Setting Sun, a title which is equivalent to the Assyrian *Sar Akharri*, "King of Syria," the very title which Chedorlaomer must have assumed during his fourteen years' rule over the land of Southern Palestine.

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* Schräder, *Cuneiform Inscriptions and the Old Testament* on Gen. xiv. 1.

Let us now examine the other names of the confederate kings. Amraphel, a name which does not admit of a Semitic etymology to which Gesenius gives the far-fetched explanation of אִמֶּר and אֲפֶל, "the commandment which went forth," now finds its explanation in the inscriptions. The name of the father of Khammurabi is given in our list of Kings as Sin-muballit. "The Moon-god is the life-giver." Now, many of the Chaldean kings having a bilingual population, had dual forms of their names in Akkadian and Semitic Babylonian, and the form which this name would take in Akkadian would be that of Amar-pal, a name corresponding exactly to that of Amraphel in this important Hebrew record. Babylon, as we know, was built in the land of Shinar (Gen. xi. 2).* The third member of the confederation was called Tidal, King of the Goim, or Targal, as the Septuagint reads, which is probably the more correct reading. This name is, in all probability, to be restored in the Akkadian form of Tar-gal, "the great Judge," while the land of Goim (R.V.) is the land of Guti, or Gutium of the inscriptions, the district of South Kurdistan to the north-east of Chaldea. Lastly, as to the name of the Elamite king. It is evident from the expression, "twelve years they served Chedorlaomer," that the Elamite king was the head of the confederation, the kings of Shinar, Larsa, and Goim being of his vassals. Now we have seen Kudur-Mabug, the father of Eriaku, claiming to be ruler of Elam, and his son acting as viceroy under him. He also claims to be ruler of Sumir (Shinar) and Akkad, that is, North and South Babylonia, so that together with his rule over the West (Syria), he ruled exactly such an empire as that of Chedorlaomer. The Hebrew name Chedorlaomer כְּדָרְלָעֹמֶר is, as M. Lenormant has shown, an exact equivalent of the Elamite name 𒆪𒁺𒌨𒀭𒆷𒂵𒈥𒊏, KU-DU-UR (DP) LA-GA-MAR-RA, the G here corresponding to the guttural ע. The name, which means "Servant of the God Lagamar," is formed like KUDUR-Nakhundi, "Servant of Nakhundi," or Kudur-Kharbi, "Servant of Bel," will, I have no doubt, some day be found on the monuments.

Of the Elamite kings of this period we have the names of Kudur-Nakhundi, Simti-Silkhak, and Kudur-Mabug. And to these three we may add the name of KUDUR LAGAMAR; and others no doubt some day may be found on the monuments to complete the dynasty from B.C. 2280–2120.

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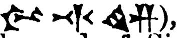
* Shinar—M. Lenormant has shown that the Shinar of the Bible is the same as the Sumir of the Monuments, the district of Babylonia south of the Nahr Malka.—*Etudes Accadiennes*, Part 1.

The following will show the arrangement of the reigns of the period:—

—	Kings of Shinar or Babylon.	King of Larsa.	Kings of Elam.	—
B.C. 2280			Kudur-Nahkundi	Capture of Erech.
2232	Sumu-abi			
2217	Sumu-lan (?)			
2182	Zabu-			Built Temple at Agadhe.
2168	Abil Sin			
			KudurLagamar	(Chedorlaomer)
2150	Sin-Muballidh (Amraphel)	Eri-Aku (Arioch)	Simti-Silkhak	Targal King Guti (Goim)
			Kudur-Mabug	Battle of Siddim. Shortly before this broke the power of the Elamite rulers
2120	Khammu-rabi			

From these inscriptions we find that from B.C. 2280–2120, the kings of Elam were supreme over a large portion of Chaldea, and that the King of Larsa or Elassar was the son of one of them, and acting as viceroy under his father. The kings of Shinar or Sumir and the King of the Guti or Kurdistan were also in alliance with the others. A very valuable proof of the relationship between the kings of the land of Guti or Kurdistan, and Babylonia, is furnished by a monument discovered by Mr. Rassam at Aboo Hubba, the ancient Sippara. It is a stone cap of a column, much injured, which bears a votive inscription of a king of Gu-ti-im (), the name is unfortunately obliterated, to the Sun-god of Sippara. The inscription is very archaic, and apparently of great antiquity.

The geographical horizon of the Chaldeans at this early period is very well revealed in the astronomical omen tablets, forming part of the great astrological work entitled the *Book of the Observation of Bel*, which consisted of seventy tablet books, and the compilation of which was attributed to Sargon I., King of Agadhe (B.C. 3750). It is, of course, impossible to prove that this is a correct attribution, but, judging from the omens and records of eclipses, &c., the work is certainly older than the twenty-fifth century before our era. In this work, the most important tablet of which is a list of omens derived from eclipses (W.A.I., iii. 60), we find reference made to many lands with which the scribes were acquainted, and the fate of which they read in these celestial signs.

On the east of the Tigris we find Elam, called NUM-MA, "the high land," mentioned, and along with it the land of Anzan (68); that is the district of which Susa was the capital. North of these were the two important states of SU-EDINA and Guti. The land of Guti, Gutium, and Kuti, as it is variously called, was the mountain region lying to the north-east of Babylonia, and corresponding to the modern Kurdistan. This district was the Goim of the Hebrew writers, of which Tidal or Targal was king. It embraced the mountains about the modern Holwan, the Halman or Alman of the inscriptions, and extended as far north as the plain of Assyria, and the head-waters of the Greater and Lesser Zab. The land of Suedina—which means "The land of the border plain,"—was the low land lying between the mountains above mentioned and the Tigris, and watered the Mie Dhurnat or Tornadotus, and the Mie Kaldu or Gyndes. In the inscription of the Kassite king Agu-kak-rimi, the arrangement of these provinces is very clearly set forth. The king claims the titles of king of the Kassi or Cosseans, and the Akkadians, king of the wide-spreading land of Babylonia, the coloniser of the land of Asnunak, a vast people, king of Padan and Alman, and king of Guti, male and female. Here we see Padan replaces Suedin, and Alman is specified as a province of the land of the Guti or Goim. The names Suedin and Guti, as Dr. Delitzsch has shown, are sometimes shortened into Suti and Kuti, and even Kū and Sū, and may be identified with the Koa and Shoa of Ezekiel xxiii. 23. "Therefore, I will bring them against thee on every side; the Babylonians, the Chaldeans, Pekod, and Shoa, and Koa, and all the Assyrians with them." These tribes formed the eastern neighbours of the Babylonians. For the western neighbours we obtain from these tablets two nations, "The land of Martu," of the Akkadians, that is, "The land of the house of the setting sun," the "Mat Akharri," or western land of the Semites, and the land of the Khatti or Hittites. In ancient times Martu meant rather the west in general, but in later time, especially during the days of the Assyrian rule, it became applied particularly to Phœnicia. The Akharri or Phœnicians were the Khar or Khal of the Egyptians; and the Khatti of the astronomical tablet are the Kheta of the Egyptians, the Hittites of the Bible.

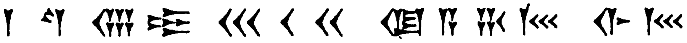
We thus see the geographical area of these astronomical inscriptions exactly embraces that which such an alliance and such a campaign as is recorded in Gen. xiv. would require. Another point of interest preserved in the Hebrew account is that the advance is made from Chaldea from the south, and not by the ancient military road through Northern Mesopotamia and Syria, entering Palestine by the north.

Some of the omens in these tablets are especially curious; we may quote the following: "On the 20th day an eclipse * happens; the king of the land of the Khatti plunders and on the throne seizes." And one relating to Elam is especially interesting, as it has a curious correspondence to the termination of the campaign of Chedorlaomer.

"In the month Tasrituv on the 14th day an eclipse happens, and in the south it begins and in the west it ends. In the evening watch it begins, and in the middle watch it ends. Southward at the time of its appearance the shadow is seen. Then, to the King of Elam, an omen it gives. The forces of Elam in battle are, there is no return in peace to his people." The city of Ur, the birthplace of Abram, was also the subject of astrological omens, as we read regarding an eclipse in the month Adar to the King of Kisarra, † an omen is given. Disaster to Ur ( ).

As an example of one of these very curious and most Chaldean series of tablets, that land being always regarded as the home of astronomy and astrology, I quote the following, which embraces some of the lands referred to in its prognostications.

W.A.I., iii. 58. 1.

1. 

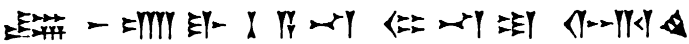
INA YUM XVI. SIN U SAMA ITTI A - KHI INNAMARU

On the Sixteenth day the Moon and Sun with each other are seen

2.

SARRU ANA SARRI NAKURTI ISAPAR.

King to king hostility sends.

3. 

SARRU INA EKALLI SU A - NA MI - NA - AT AR - KHI.

The King in his palace for the space of a month

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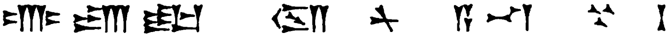
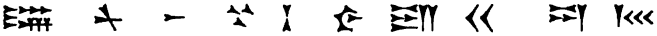
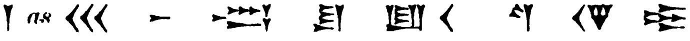
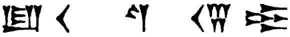
* = *antalu*, or *attalu*, really "dark sky," from נטל "to cover"

† The desert land to the west of Chaldea.

4. 
U - TA - KHIR SEPA NAKRI A - NA MATI - SU
remains. The feet of the enemy to his land (come)

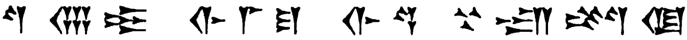
5. 
NIS NAKRI INA MATI-SU SAL - DHA - NIS ITALLAKU.
The enemy in his land as rulers go to and fro.

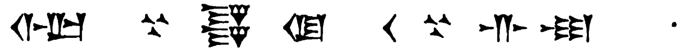
6. 
ENUVA SIN INA ARKHI DUZU LU - U YUM XIV
When the Moon in the Month Tammuz either on the 14th


LU - U YUM XV.
or on the 15th day

7.
ITTI DP SAMSI LA INAMM-IR.
with the Sun is not seen.

8.
SARRU INA EKALLI SU U - TA - KHIR.
The King in his palace remains.

9. 
YUM XVI. INAMMIR-VA DUMKU MAT SU - EDINA.
The 16th day it is seen and fortunate is the land of Suedin,

10. 
LIMNUTUV MAT AKKADI U MAT MAR-TU (Akharri).
Unfortunate is the land of Akkad and the land of Phœnicia or Syria.

11.
SA NABU - KUL-LANI.
The report of Nabu-Kullani.

If, then, the campaign of Kudur Lagamar and the other Mesopotamian kings took place between B.C. 2280 and most probably about B.C. 2235, the date makes a close synchronism with the period when the Asiatic Hyksos kings invaded Egypt. The account given by Josephus, quoting Manetho, of this event, is as follows:—

"There was a certain king called Timaius. In his reign, I know not for what reason, God was unpropitious, and people of low origin from the country of the East suddenly attacked the land, of which they easily and without struggle gained possession. They overthrew those who ruled there, burnt down the cities, and laid waste the temples of the gods. They ill-treated all the inhabitants, for they killed some and carried into captivity others, with their wives and children.

"And they made one from the midst of them king, whose name was Salatis.* He fixed his seat in Memphis, collected the taxes from the upper and lower country, and placed garrisons in the most important places. But he particularly fortified the eastern boundary, *for he foresaw that the Assyrians, then the most powerful people, would undertake to make an attack on his country.*"

Brugsch, whose chronology seems the most systematised of all, would make the commencement of the Hyksos rule B.C. 2233, and if we may suggest that Manetho has here written Assyrians for Chaldeans, the synchronism is almost exact with the campaign of Kudur Lagamar. Abram had been favourably received in Egypt, and was dwelling at Hebron or Kirjath Arba, where was a Hittite colony, and these people we know took a prominent part in the Hyksos invasion.

"THE FAMILY OF ABRAM."

The genealogy of Abram given in the Scriptures (Gen. x. 10, 31) is most valuable on account of the names there given, and many of these are to be found in the inscriptions—or at least have their equivalents in some Assyrian nouns:—

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* Evidently from root שלט "to rule," *saladhu*, "to govern," in Assyrian, *saldhanu*, "sultan or governour." Note the use of this word in Saldhanis in the inscription just translated. Line 5.

TABLE OF NAMES IN THE GENEALOGY OF ABRAM.

No.	Name.	Hebrew.	Assyrian Equivalent.	——
1	Shem	שֵׁם	Samu	
2	Salakh	שָׁלָח	Salakhu	To branch or sprout.
3	Eber	עֵבֶר	Ebiru or Abar	Place of crossing.
4	Peleg	פֶּלֶג	Pulug	Division.
5	Reu	רְעוּ	Reuv	Prince or shepherd.
6	Serug	שְׂרוּג	Sarik ?	
7	Nahor	נָחוֹר	Nakhiru	Snorter: name given to dolphin.
8	Terah	תֶּרַח	Tarakhu	To wander or migrate.
9	Abram	אַבְרָם	Abramu	High father.
10	Haran	חָרָן	Kharranu.	Kharran.
11	Sarai	שָׂרַי	Sarratu	Princess.
12	Milkah	מִלְכָּה	Milkatu	Queen or princess.
13	Ishmael	יִשְׁמָעֵאל	Ismi-ilu	God has heard.
14	Laban	לָבָן	Labanu	White.
15	Hagar		Hagaranu	The wanderers.

NOTE.—In connexion with these early Hebrew names I may note that in a list of verbal forms in W.A.I., vol. v. plate 46, the verbal forms *tutamrad*, *tutamrada* and *tumarad*—all derivatives from *maradu*, Hebrew מָרַד "to rebel," from which Nimrod is derived, occur, so that this long-disputed name must be Semitic, and not a corruption of the Akkadian Amarud, as many have thought.

I have already shown how the existence of Semitic inscriptions from a very early period in Chaldea indicates the existence of a Semitic population, and as to the population during the reigns of Rim-Aku, Khammurabi, and his son Samsuiluna, we have access to some most valuable information. The existence of this Semitic population in the cities of southern Chaldea at this time side by side with Akkadian and other Turanian people is proved most clearly by the discovery of a bilingual inscription of King Khammurabi, now in the British Museum, and one column of which is written in Akkadian, the other in Semitic Babylonian,* and by the discovery of inscriptions both in Akkadian and Semitic Babylonian. Of the Semitic inscriptions of this king both are in the Louvre. One of these has been known a long time, and was first published by M. Menant; the other, on a small alabaster tablet, was first published by myself in 1879. Throughout this long inscription of thirty-seven lines there are only six words that are not pure Semitic, or which are not to be found in the Hebrew Bible. The inscription reads, "To Merodach the great lord, the giver of fertility from the gods Lord of the (Temples) E-Sagila* and E Zida† his lord, Khammurabi The proclaimed of Anu. The beloved of Bel, the worshipper of Samas—the prince beloved by Merodach. The great King King of the people of the Sumeri‡ and Akkadi,§ King of the four quarters The Prince who the people and land to be his dominion the god Bel has given him. Their seed to his hand he has entrusted. To Merodach the god his Creator, in Borsippa‖ his beloved city E Zida his holy shrine he has made it."

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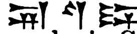
* Too mutilated to be published.

Still more important than these inscriptions, which are in themselves absolute proof as to the existence of a Semitic people who were subjects of the great king and to whom these texts appealed, are a series of tablets found in the mound of Senkereh, the ancient Larsa, which we know was the capital of the province ruled by Eriaku the son of Kudur-Mabug.

These tablets are a number of legal and commercial inscriptions, which were found stored in the ruins of one of the temples of Larsa, probably the temple of the Sun-god, which was the chief edifice of the city. This temple in Larsa, which was the southern Heliopolis, was called  E-PAR-RA, "the House of Light"—and, like most temples in Chaldea, was the law court and treasury of the district. In this treasury at Larsa more than four thousand years ago these precious documents, which now form the treasures of the British Museum, and which yield up such important evidence for my paper, were stored. The tablets are of peculiar make, belonging to a class known as envelope tablets—that is, the inscriptions are written in duplicate and placed one inside the other. First a tablet is inscribed and partially dried, then round it a clay envelope is made and the inscription repeated, so that if the outer text is damaged, the inner one is complete and the deed preserved.

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* The House of the Lofty Head.

† The House of Life.

‡ South Babylonia, the Shinar of the Hebrews.

§ North Babylonia, with Agadhe or Akkad as its capital.

‖ The city whose ruins are marked by the Birs-Nimrud, a sister city of Babylon.

The majority of the tablets are written in the agglutinative Akkadian dialect, but among them are six written in Semitic Babylonian. Among the witnesses, however, in the Akkadian tablets many Semitic names appear. These tablets, coming as they do from the immediate region of Ur of the Chaldees at a time almost exactly contemporary with the time of Abram, furnish an undoubted proof of the existence of a people speaking a language and bearing names similar to those of the early Hebrews.

In the following list I have selected only a few, but many more might be added.

LIST OF NAMES FROM TABLETS DATED IN REIGNS OF KHAMMURABI AND ERIAKU.

—	Name.	Meaning.	Hebrew Equivalent.
1	Aba	My Father	Abi (2 Kings xviii. 2).
2	Abuni	Our father	
3	Abil	Son	Abel (Gen. iv. 2).
4	Abil irzituv	Son of the Soil	
5	Abil-Sin	Son of the Moon-god	
6	Amil Martu	Servant of the God of the West	Evil Merodach (2 Kings xxv. 27).
7	Amil Uruki	Servant of the Moon	
8	Amil Nana	Servant of Istar	
9	Amil Sin	Servant of the Moon-god	
10	Khatte	(The) Hittite	Heth or Kheth (Gen. x. 16).
11	Naram-ilani	Beloved of the Gods	
12	Ana-panu-ili	To the face of God	Peniel (Gen. xxxii. 30).
13	Ismi-ilu	God hears	Ishmael (Gen. xvii. 11).
14	Ilu-ka-Dibbara	Thy god is Dibbara	In these compounds compare
15	Ilu-ka Hea	Thy god is Hea	Eli-ka (2 Samuel xxxiii. 25).
16	Ilu-ka-Sin	Thy god is the Moon	Eli-ka (2 Samuel xxxiii. 25).
17	Ilu bani	God has made (me)	El-kanah (1 Samuel i. 1).
18	Ilu-nazir	God protects	Eli-ezer (Ex. xviii. 4).
19	Ilu-balidh	God lives	Hiel (1 Kings xvi. 34).
20	Ilu-su abi-su	His god is his father	
21	Ilu su-bani	His god is his creator	Benaiah (2 Samuel viii. 18). Comp. No. 17.
22	Ilu su ibni-su	His god has made him	Benaiah (2 Samuel viii. 18).
23.	Ilu-su-nazir	His god protects	
24	Kainuv	The Settler	Cain (Gen. iv. 1).

The resemblance of these names from the private documents of the inhabitants of Larsa to those of the Hebrews is so striking, as to at once mark them as the product of a people of the same language and thought. This list also affords a striking commentary and confirmation of the words used by the Rev. T. K. Cheyne in his description of Hebrew proper names in the Teacher's Bible. "The nations related to the Jews, and especially the Assyrians and Babylonians (who early came in contact with the ancestors of the Israelites), seem to have possessed a leaven of something akin to spirituality which distinguishes them from other Gentiles. Even to readers who remember that it was from Padan-Aram, the Piedmont beyond Euphrates, that Abram sought a wife for the Child of Promise, and Rebekah a wife for Jacob, the next heir to the promises, it will be a pleasing surprise to notice the similarity in the expression of religious faith between the Israelitish proper names and the few Assyrian and Babylonian preserved in the Old Testament." The list which I now publish will still further strengthen these remarks of so able a Hebraist. Another very important fact in connexion with these names is that they come from the common people; they express in simple language the religious thoughts, convictions, and feelings of persons in all ranks of society. How truly trustful and religious is the thought in *Ilu bani*, "God has made (me)," *Ilu nazir*, "God protects me," *Ilu-su-abi-su*, "His god is his father," and others. The word ILU 𒀭 or 𒄿𒇻 *iluv* which enters into the composition of these names is the exact equivalent of the Hebrew forms אל and אלה, which form an element in so many Bible names, and would seem to indicate the worship of one supreme God, worshipped under the abstract form of Il, El, or the Allah of the Arabs, as "the God." The names, such as *Ilu-ka-Hea, Ilu-ka-Sin,* and *Abil-Sin* show that other gods were worshipped, which is in conformity with the statement in the words, "Your fathers dwelt of old beyond the river,* even Terah the father of Abraham, and the father of Nahor, and they served other gods" (Josh. xxiv. 2, R.V.). We may also notice the passage, "The God of Abraham and the God of Nahor," *the gods of their fathers* (Gen. xxxi. 53), where there is a manifest contrast between the god of Abram and the gods of Nahor, Terah, &c. Indeed, the margin gives the reading, *gods*. The next phrase in the verse seems to emphasise this, and "Jacob sware by the fear of his father Isaac." The word here rendered *fear* is פַחַד,

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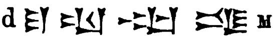
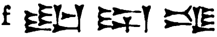
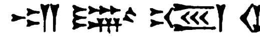
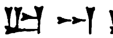
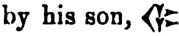
* The Euphrates.

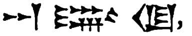
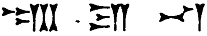
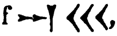
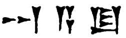
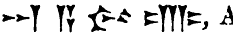
and may find its equivalent in the *pakidu ilani, pakidu killān*, "Fear of the gods," "Fear of the world," literally "reverenced one," which occur in hymns.

The names occurring in these tablets contain the names of many gods, but of the Semitic names *more than thirty per cent.* are compounds of the name of the Moon-god Sin. Such names, to quote only a few, as *Sin-isme*, the Moon-god hears; *Sin Magir*, the Moon-god is reverenced; *Abil Sin*, son of the Moon-god; *Ilu-ka-Sin*, thy god is the Moon-god; *Avil Sin*, man or servant of the Moon-god; *Sin Mubanit*, the Moon-god is the Creator, and others. The discovery of these names is of the highest importance, because to my mind it removes for ever the theory of the mythological character of Abram and his family, and substitutes a perfectly rational meaning in accordance with Oriental thought, in place of the mythological theory. The argument of Goldziher is that because Abramu means "High Father," therefore he is the High Father, the Night Sky, akin to the Chaldean ANU, who has also the title of *Abu ramu*. In the same manner Sarai or Sarah is the Moon as the wife of the Night Sky, the high father, or Milcah the daughter of the Moon, Laban, because their names mean "the Princess" or "Queen," titles often applied to the Moon-goddess. These tablets show how the Moon, Sun, and other powers of Nature were worshipped, and how nature was used as a magazine of symbols, but there is no need to say because the people bore names derived from Nature that they were but mythic nature—gods, and heroes. The prevalence of names which might readily be turned into mythic characters seems to me to be accounted for by this revelation of the tablets from Larsa and Ur. Here the Moon and Sun were the great gods, and such names as Abu ramu, Laban, Sarratu, and Malkatu would be familiar as epithets of the gods, and become among the people proper names.

In a list of synonyms of titles (W.A.I., v. pl. 41, Ob. 11) we find  MA-AL-KA-TUV, Milcah, a synonym of  SAR-RA-TUV, Sarah.

The prominence given to the Moon-god in the popular names of the people again throws light upon the migration from the city of Ur to Haran.

Ur was called by the Akkadians , UR-UNU-KI, literally "Moon dwelling place," and by the Semitics *Uru*, the exact equivalent of the Hebrew אור (Gen. xi. 28). The great temple which formed the Acropolis of Ur, and which was partly restored by  UR-BAHU, or Likbagas, and completed by his son,  DUN-GI, was dedicated to the Moon-god, called "Sin, the Lord of the gods of Heavens and Earth."

The Moon-god had three chief names in his inscriptions:—1. , the Akkadian rendering of which was UR, and which was equivalent to the Semitic NANNARU, "the Illuminator," from Namaru (נמר), "to be bright," "to see." The epithet applied to the Sun and Moon in the inscription from Aboo Hubba, a translation of which is appended to this paper, Merodach the great Lord, and Sin the Illuminators (Nānnari) of Heaven and Earth, includes this title. Another epithet was  EN-ZU-NA, "Lord of increase and decrease," that is, "Lord of waxing and waning;" and the third title was that of , Lord of (the) thirty, that is of the month. Another title of the Moon-god, though less frequently used, was that of  or , Aku or Agū, the meaning of which is apparently the god of the circle or crown, from *aga* and *ega*, "the crown."

The prominence given to the Moon over the Sun, as implied in the words "(Ilu) Samas u (Ilu) Istar zit-libbi-su namra ana Sin abi bani su-nu likbu damikati." "May the Sun-god and Istar, the bright offspring of his heart, to Sin the father their Creator speak favourably," is a relic of the old nomadic life, when the bright Moon-god furnished the wanderers with light in the cool night, and was worshipped by the pre-Islamic Arabs.

The following extract from a cylinder found in the temple of the Moon-god at Ur shows very clearly the high religious ideas which were held of this god in that ancient city:—

> "Oh Sin, Lord of the Gods, King of the Gods of Heaven and Earth, (and) God of the Gods who inhabit the heavens, the mighty ones, for this temple with joy at thy entrance, may thy lips establish the blessings of Bit Sagila, Bit Zida and Bit Giz-nugal, the temples of thy great divinity. Set the fear of thy great divinity in the hearts of his people that they err not; for thy great divinity may their foundations remain firm like the Heavens. As for me, Nabonidus, King of Babylon, preserve me from sinning against thy great divinity, and grant me the gift of a life of long days; and plant in the heart of Bel-sarra-utzur (Belshazzar), the eldest son, the offspring of my heart, reverence for thy great divinity, and never may he incline to sin. With fulness of life may he be satisfied."

The hymn to the Moon-god published by M. Lenormant, and also given by Mr. Tomkins in his paper on "The Life and Times of Abram," formed, no doubt, part of the liturgy of this temple, and the position which this god holds in the theogony of Chaldea is very clearly set forth in the creation tablet.

> The Illuminator he made to shine, to wander through the night.
> He appointed it to fix the night, until the coming forth of day.
> Every month without fail by its disk he established
> In the beginning of the month at the appearance of evening
> Horns shine forth to enlighten the night.
>   On the seventh day to a circle it approaches
>   They open then the darkness.

This prominence given to the Moon over the Sun in the Babylonian Pantheon was a remnant of the old nomadic life which the ancestors of both Akkadians and Semites had led in the early days of their national life. It is this love of the night sky, the moon, and the stars that caused the Chaldeans to be so great astronomers; and in the ancient hymns we find night taking precedence of day, as in the well-known phrase in the first chapter of Genesis, "And there was evening, and there was morning" (R.V.). It is this ancient Sabeanism or astro-theology that led to the identification of the gods as stars; and so we find 𒀭 the ordinary sign for god explained by 𒆕𒅗𒁍 *Kak-ka-bū*, "star;" and the names given to stars show how closely life was associated with them, as, for example, in a list of stars, from Babylon, we find "the star of the crossers of the sea," possibly the pole-star, while Mercury is called "the bringer of change to men," Venus as evening star, "the proclaimer of the stars." So also the morning star was "the light of day." Other stars were called "the star of life," "the star of the winds, the star that causes winds." All these names show a close observation of the heavens, which found its outlet in the Sabeanism of the pre-Islamic Arabs. How similar this trait in the ancient Babylonian character was to that of the Arabs is at once shown by the following passages descriptive of the love these wanderers have for the stars. One writer thus describes the relation of the Arabs to the night and the stars:—"With the refreshing dew of evening, not Venus only or the Moon, but the whole glory of the starry heavens met the eye and touched the spirit of the Arabs. High above the tents and the resting-places of the flocks, above the nocturnal raid and waiting ambuscade, and all the doings of men, the stars passed along on their glittering courses. The stars guided the Arabs on their way through the desert; certain constellations announced the wished-for rain; others the wild storms, the changes of the seasons, the times for breeding in the flocks and herds." Hence, to the tribes of the desert especially brilliant stars appeared as living spirits, as rulers over nature and the fortunes of mankind. We are not without many traces of this observation of the stars in the Hebrew writings. In that beautiful book so full of all appertaining to desert life, the book of Job, we have numerous references, as, for example, Job iii. 9: "Let the stars of the twilight thereof be dark. Let it look for light, but have none. Neither let it behold the eyelids of the morning." "Behold the height of the stars, how high they are" (Job xxii. 12). "Canst thou bind the cluster* of the Pleiades, or loose the bands of Orion? Canst thou lead forth the Mazzaroth in their seasons? or canst thou guide the bear with her train?" (xxxviii. 31, 32). And the beautiful simile from shepherd life: "He telleth the number of the stars; he giveth them all their names" (Ps. cxlvii. 4, R.V.). And this very symbolism, so familiar to Abram the Chaldean, is made the means of foreshadowing one of the most important prophecies: "And he brought him forth abroad, and said, Look now toward heaven, and tell the stars, if thou be able to number them. And he said unto him, So shall thy seed be" (Gen. xv. 5).

At the time when Abram left his Chaldean home, the astronomy of Chaldea had attained nearly as high a development as it ever reached, and so the phases of the moon, the measurement of time by the stars, &c., would be known to him and some of the family, and no doubt some of the servants and followers of Terah were worshippers of the moon and stars.†

We now turn to the Hebrew record, and we find the first step in the migration was the removal from Ur of the Chaldees to Haran—"And Terah took Abram, his son, and Lot, the son of Haran, his son's son, and Sarai, his daughter-in-law, his son Abram's wife; and they went forth with them from Ur of the Chaldees, to go unto the land of Canaan, and they came unto Haran and dwelt there" (Gen. xi. 31). Considerable discussion has taken place as to the site of Haran, but inscriptions now before us seem definitely to settle this question. I will first of all take the various references to this city which occur in the Hebrew Scriptures. In addition to the reference above quoted and its repetition (xii. 5), we have also the command of Jacob to flee from Esau—"Now, therefore, my son, obey my voice; arise, flee thou to Laban, my brother, to Haran" (xxvii. 43); and bearing upon this we read also, "Arise, go to Padan-Aram, to the house of Bethuel, thy mother's father; and take a wife from thence of the daughters to Laban, thy mother's brother" (xxviii. 2). "And Jacob went out from Beersheba and went toward Haran, and in that journey he passed through Bethel" (xxviii. 10, 19). A still more important reference as to the locality is that relative to the flight of Jacob—"And Jacob stole away unawares to Laban the Syrian, in that he told him not he fled. So he fled with all that he had, and he rose and he *passed over the river*,* and set his face toward the mountain of Gilead. And it was told Laban on the third day that Jacob had fled. And he took his brethren with him and pursued after him seven days, and he overtook him in the mountain of Gilead (Gen. xxxi. 21–23). Later references are in the message of Sennacherib to Hezekiah. "Have the gods of the nations delivered them which my fathers have destroyed—Gozan, Haran, and the children of Eden, which were in Telassar?" (2 Kings xix. 12). And in the *résumé* of the commerce of Tyre (Ezek. xxvii. 23), Haran, and Canneh, and Eden, and the traffickers of Sheba,† Ashur, and Chilmad. In these extracts we find Haran definitely placed on the east side of the Euphrates, and in the neighbourhood of Gozan and Assyria. The land of Gozan was the Gil-za-nu‡ or Guzānu of the inscriptions, the province watered by the Khabur and the Belikh; while the land of Eden here is the Adini of the same records, and was situated in the same region. Charan therefore lay in the basin of the Khabur and Belik, and its site corresponds to the modern town of Haran, the Charræ of the Romans, on a small tributary of the Belikh.

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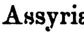
* Really "family."

† The worship of the stars was prohibited to the Jews (Deut. iv. 19), but this did not debar them from admiring them, studying them, and deriving most beautiful similes from them.

Of the ancient connexion between Kharran and Chaldea we have much evidence. In the first place, the name , KHAR-KA-NU, is not Semitic, being a derivation from the Akkadian KHARRAN "A road." In a bilingual vocabulary this word *Kharran* is given as an equivalent of the Assyrian words *Daragu* and *Metik*, the one the equivalent of the Hebrew דֶּרֶךְ, "A way or road," the latter, a participial derivation from עָתַק, "To transfer," means of transfer, or road. *Kharranu* is also an ideographic meaning of the sign , the ancient form of which was , representing two cross roads. It was, therefore, a city which derived its name from

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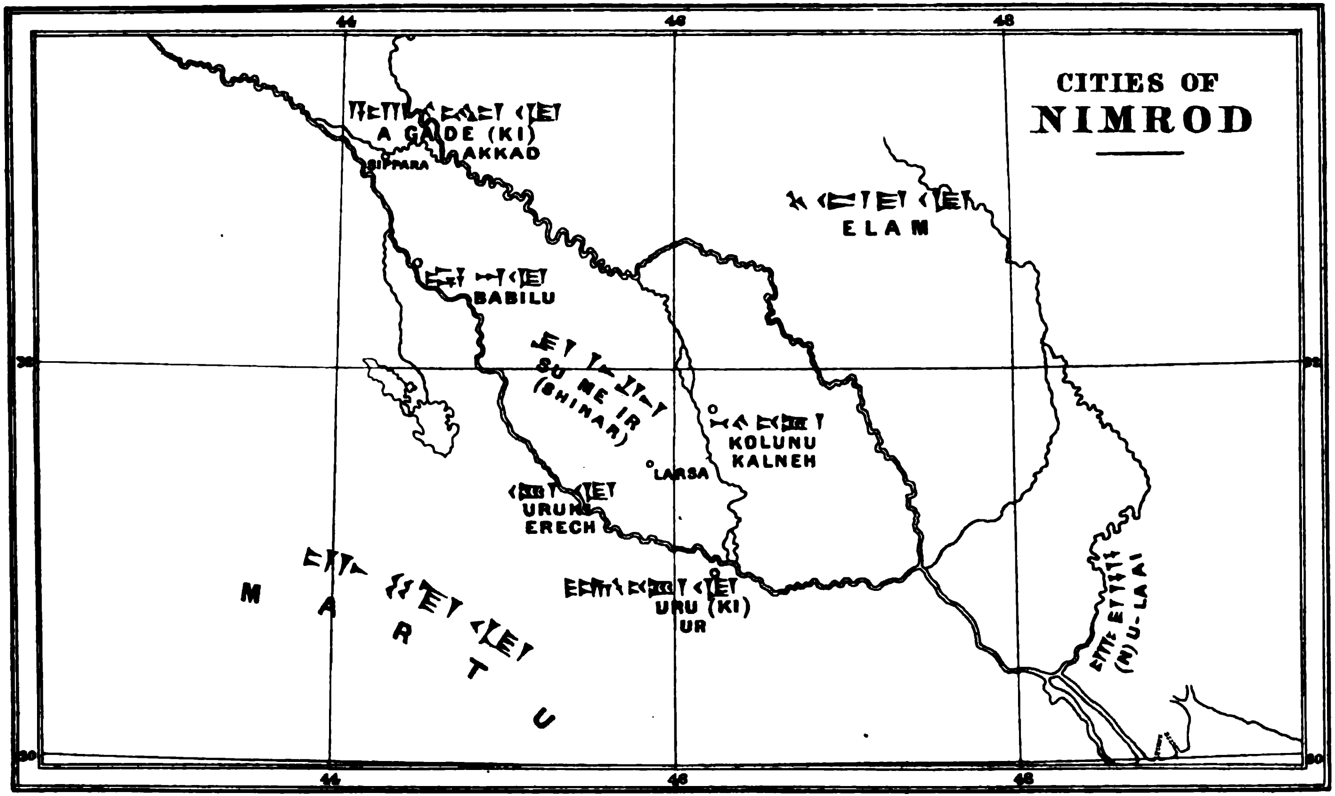
* For the use of נהר, "the river," for the Euphrates, compare Exod. xxxiii. 31, where the borders of the future kingdom are given; also Isaiah vii. 20, and the contrast in Jer. ii. 18 between the Nile and the Euphrates; also Micah vii. 12, &c.

† The Wady Saba near Anah, on the Euphrates.

‡ The Black Obelisk and W.A.I., v. 69, the land of Gu-za-ni.



CITIES OF NIMROD

Wyman & Sons, Printers.

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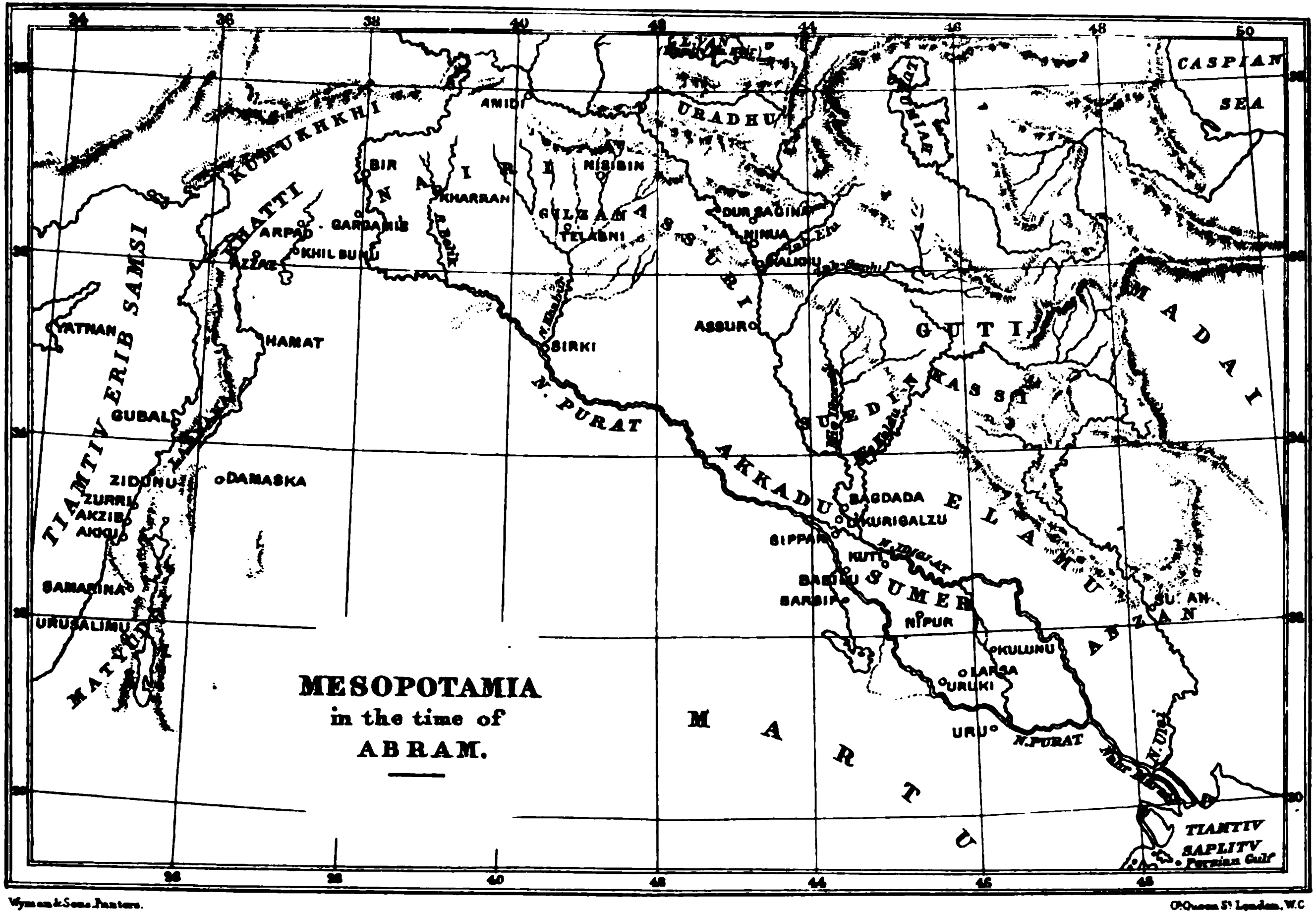
MESOPOTAMIA
in the time of
ABRAM.

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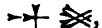
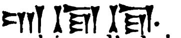
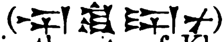
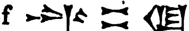
being on one of the great roadways of the Tigro-Euphrates Valley, or one of the centres where various roadways met. This is just exactly the position of Kharran, for from its various gateways, roads branch off to Mosul, to Diarbeker, Berijik *viâ* Orfa, to Balis, &c., just as in ancient days here centred the roadways from Bir, Carchemish, Sirki (at the month of the Khabour), Nineveh, and Babylon.

The early connexion between Kharran and Chaldea is shown by references to it in the great astronomical work in which Sulpa-uddu, "The Messenger of the Rising Sun," or Mercury, is called the "Prince of the men of Kharran" (W.A.I., iii. 67, 28), and on a chalcedony seal in the British Museum we have a priest worshipping before an altar, upon which is the conical stone, and above it the Crescent Moon, with the inscription , the "God of Kharran."

Kharran was, however, chiefly celebrated as the site of a very ancient temple of the Moon-god Sin, the same deity that was the divine patron of Ur. This temple was called . BIT-KHUL-KHUL, "The house of Brightness," and is called in the cylinder of Nabonidus, BIT-SIN SA KI-RIB AL KHAR-RA-NU (), "The house of Sin (Moon), which is within the city of Kharran." The history of this temple is preserved to us in the cylinder of Nabonidus, which records his restoration of this temple. In exploring this temple at the time of its restoration, the king states that he found there the cylinder of Shalmaneser II., son of Assurnazirpal, whose reign commenced in B.C. 858, but the great work of restoration seems to have been that of Assurbanipal, the son of Esarhaddon, who restored the temple shortly after B.C. 670.

There is a tablet in the British Museum which throws some considerable light on the prominent part which Assurbanipal took in the restoration of this temple. It appears that in the year B.C. 670, when Esarhaddon was starting on his second campaign against TARKU or Tirhakah, that he halted at Kharran on the march. And entering into the temple, there the priests pointed out to him the moon shining over the fields with two crowns or a double halo on his head. This they interpreted as an omen that there should be two kings in the land; so Esarhaddon crowned his son king, and sent him back to Nineveh to rule. This coronation in the temple at Kharran took place on the 12th day of the month Airu, April, B.C. 670. The result of this important event was that Assurbanipal attached a great reverence to this temple, and restored and beautified it very much, so much so that the temple, in the days of Nabonidus, was almost regarded as his work. The

Babylonian king in his inscription says: "My great army from the land of Gaza * which is on the frontiers of Egypt† from the upper sea on the other side‡ of the Euphrates as far as the lower sea.§ Kings, princes, high priests, and my vast army which Sin, Samas and Istar had gathered for the building of Bit Khullkhul, the temple of the Moon-god, which is within Kharran which Assur-ban-apla, King of Assyria, son of Assur-akha-iddina, King of Assyria, a prince, my predecessor, had made." In the same inscription the king states that he found the inscribed cylinders of Shalmaneser, son of Assurnazirpal, so the temple must have existed as early as B.C. 858. The passage relating to these records reads: Eli. temien. sa D.P. Assur-ban-apla sar mat assuri sa temien dp Sulmanristan abal D.P. Assur-nazir apla imuru. "Upon the foundation cylinder of Assurbanipal and of Shalmaneser, son of Assurnazirpal they looked."

Kharran is also mentioned in the inscriptions of Khorsabad of Sargon II. (B.C. 721) in two places. In the Palace text we find Kharran mentioned along with Assur under its ancient name of  Pal-bi-ki "the place of his crossing," (Botta, iv. 4), also in the Annals, col. ii. 2, the land of Kharran is mentioned apparently in connexion with an eclipse.

All of these references serve to show that Kharran was an important city, connected from an early period with both Chaldea and Assyria.

The inscription of Nabonidus which I have translated at the end of this paper, gives a very elaborate description of the temple and the works of restoration and adornment carried out by the Babylonian king. "Over and above the kings, my fathers, its work I made strong. I perfected its adornment. This temple from its foundation to its roof anew I made, and perfected its adornment. Great beams of fir, the product of the mount Kha-va-tu (Hivites) I spread over it. Doors of cedar wood of which their leaves were good, I hung in the gateways. With silver and gold its walls I covered, and caused to shine like white marble. Great bulls of polished alabaster, destroyers of my foes, round about I placed in its building. Two winged figures, guardians, sweepers away

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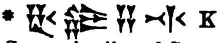
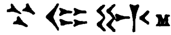
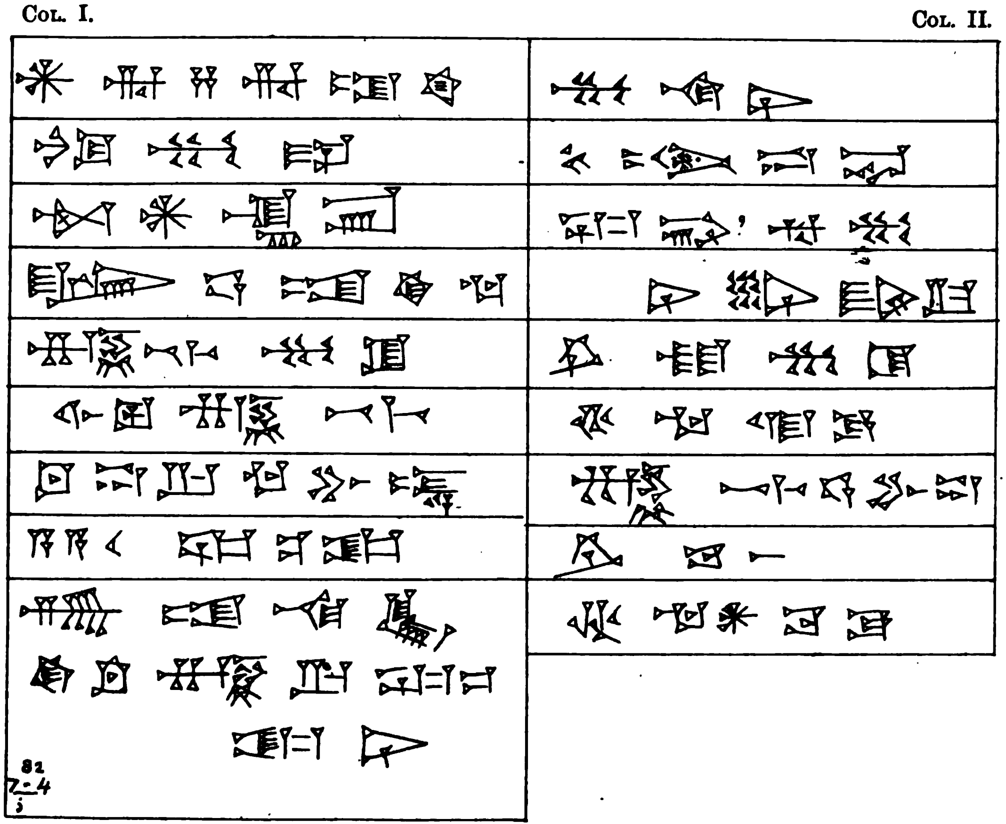
*  Kha-az-za-ti, the Kha-az-zi-ti of the inscriptions of Sennacherib and Sargon the עַזָּה or Gaza of the Bible, the most southern of the five great cities of Philistia, and close to the frontier of Egypt, the river of Egypt (Wady el Arish). This Assyrian ח for Hebrew ע is common.

†  mi-zir, Hebrew מָצוֹר.

‡ *Abarti* for *ebarti* in several words. Hebrew עֵבֶר as in the expression, "on the other side of Jordan."

§ The Persian Gulf.

TEXT OF CYLINDER.



Wyman & Sons, Lith.

of my enemies, in the gate of the rising sun and left and right I placed. The hands of Sin (Moon-god), and the Great Lady of Nusku (Morning Star), and the god Sā BIL-KU-NUNA? my lords, in Suanna (Babylon), my royal city, I took hold of, and with joy and gladness (to) the seat of the joy of heart within it (the temple) I caused to be seated. Victims, great white sheep, in their presence, I offered. I arranged the servants of Bit Khulkhul . . . . . The city of Kharran throughout its borders I caused its splendour to be bright as the rising moon." This splendid temple now lies buried beneath the mounds of Eski-Haran or Old Haran, waiting the explorer's advent to yield up its buried treasures, perchance some records of Abram himself. The creed of the worship of the Moon-god at Kharran was essentially the same as that of Ur, and the prayers which Nabonidus offered to the god of Ur and the god of Kharran show them to be the same deity.

In his cylinder inscription Nabonidus thus addresses the divine patron of the city of Kharran:—

1. As for me, Nabonidus, King of Babylon, restorer of this temple,
2. Sin, the king of the gods of the heavens and the earth, in the lifting up of his eyes,
3. Joyfully may he regard me, and in each future day from dawn to twilight,
4. May he bless my desires. My days may he prolong.
5. My years may he extend, and may he establish my reign.
6. My enemies may he capture, my evil opponents may he smite;
7. May he sweep away my foes. The great Lady Mother of the great gods,
8. In the presence of Sin, her beloved, may she present my works.
9. Samas (Sun), and Istar, the bright offspring of his heart,
10. To Sin, their father, may they speak (in) my favour.
11. Nusku (Morning star) his supreme messenger my words may he hear,
12. May he lay hold of evil.

This prayer is exactly the same as that which concludes the inscription of Nabonidus, found at Ur, and shows the creeds to be essentially the same. We have already seen how this worship of the Moon-god revealed itself in the names of the dwellers in Ur, as revealed to us in the contract tablets. We may, therefore, reasonably conclude that in their migration northward, they would migrate to a city where was a kindred race to their own, and a creed similar to that of Ur.

To conclude this paper, we may thus sum up the evidence of the monuments. From the earliest period, as remote as B.C. 3750, we have inscriptions to prove the existence of a Semitic population in the city of Ur of the Chaldees. The inscriptions found at Larsa, which relate to the trade and commerce of these people, show them to have spoken a language closely akin to the Hebrew, and to have borne personal names similar to those of the early Hebrew patriarchs. In religion, though not monotheists, they certainly had a purer creed than their Turanian-Akkadian fellow-countrymen, and at the head of the Pantheon was the supreme god, Ilu, or El, whose name, like that of El and Jehovah, entered into the composition of many personal names. In the year B.C. 2280 Chaldea was invaded by the Elamites, and a dynasty of Elamite kings established, of which Kudur-Mabug and Eriaku or Arioch were members. The fall of this dynasty, caused by the defeat of Kudur-Mabug and Eriaku by Khammurabi in B.C. 2120 would seem to synchronise very well with the defeat of Chedorlaomer, recorded in Genesis xiv. The migration of Abram must, therefore, fall within this period of 160 years. The monuments show that at this period such an alliance of Mesopotamian kings as that recorded in Genesis xiv. was most probable, and contemporary inscriptions of the kings of Larsa, Guti or Goim, and Elam are now in the British Museum. The invasion of Chaldea by the Elamites, and the conquest of Syria by these kings, synchronises very well with the date of the Hyksos invasion of Egypt, the period when Abram would have entered Egypt under the most favourable circumstances.

The invasion of Chaldea and the conquest of Ur, Erech, and Babylon by Elamites would press more severely on the Semitic than non-Semitic population, and force them to migrate northward.

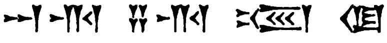
The close religious affinity between the worship of the temple at Ur and that of Harran would render the migration of this people from one city to the other most probable.

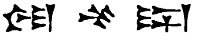
All these points taken together tend to show that the evidence of the Chaldean monuments indicates that the record of the migration of Abram as recorded in the book of Genesis is in perfect agreement with the state of Chaldean and Western Asiatic history revealed to us by these monuments.

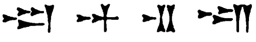
TRANSCRIPTION AND TRANSLATION.

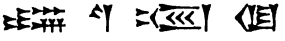
Cylinder inscription of ERI-AKU and KUDUR-MABUG, his son, about B.C. 2130–20. (British Museum.)

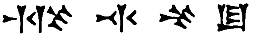
COLUMN I.

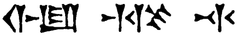
1. 
DINGIR-RI ZA - RI - UNU KI
To the goddess of Zariunu -

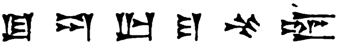
2. 
NIN - MU - RA
To my lady

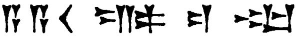
3. 
ERI - AKU
Arioch,

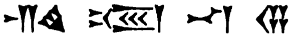
4. 
LUGAL UD - UNU KI
King of Larsa.

5. 
NAM - TIL - MU - KU
For my preservation,

6. 
U NAM TIL
and for the preservation

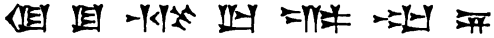
7. 
KU - DU - UR MA - BU - UK
of Kudur Mabug

8. 
AI - U SAK - GIZ - KA
His father.

9. 

GI UN - NA AZAG.

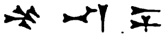
The foundation of his holy dwelling

10. 

KI - KU NAM UR - SAK - KA - NI

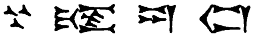
The abode of his heroism

COLUMN II.

1. 

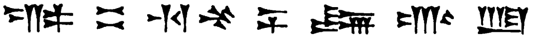
MU - NA - RU

He has made

2.  (?)

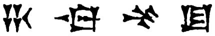
KUR LIL DU NUM

As a lofty mountain.

3. 

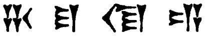
SAK - BI. KHU - MU - RU IN - ILA

Its summit may he make It was raised

4. 

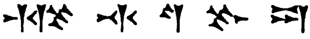
KHA - AK MU - KU

May it be for a Memorial.

5. 

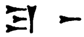
KHA-MA -. DUL - E

May it mount on high

6. 

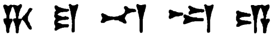
NAM TIL PAR GID - DU

A lifetime of long days

7. (?) 

TSI (?) - BA - AS

Well

8. 

KHA-MA - NA - BA E

May he complete.

SEMITIC INSCRIPTION OF KHAMMURABI.

This inscription was obtained from Babylon by Mr. Shemtob in 1879, and is now in the Musée du Louvre. I published a translation of it in June, 1879, in the *Builder,* and it has since been published by M. Ménant, "Une Nouvelle Inscription de Hammurabi, roi de Babylon (XVI° siècle avant J.C.):" *Recueil de Travaux rel. à la Philol.,* etc., ii. 76.

1.	A-NA (Ilu) MARDUK	To Merodach
	BE-LI-IV	The great Lord
	RA-BI-IV	
	NA-DI-IN KHE-GALLI	Giver of fertility
5.	A-NA ILI	From the gods
	BE-EL BIT SAG-ILA	Lord of Bit Sagila
	U BIT ZIDA	and Bit Zida
	BIL-NI-SU	His lord
	KHA-AM-MU-RA-BI	Khammurabi
10.	NA-BI-UV	Proclaimed one
	A-NAM.	of Anu
	[NA-RA]* MU	[beloved]
	[SA]* (Ilu) BEL	of Bel
	[MI]* GI-IR	Worshipper
15.	(Ilu) SAMAS	Of Samas
	REU NA-RA-AM	The Prince beloved
	(Ilu) MARDUK	Of Merodach.
	SARRU DALUM †	The Powerful King.
	SAR NISI	King of the people of
	SU-ME-RIV	Sumir
	U AK-KA-DI-IV	and Akkad
	SAR KI-IP-RA-TIV	King of the four
5.	AR-BA-IV	quarters
	I-NU (Ilu) BEL	When Bel
	MATA-U-NISI	the land and people
	A-NA-BE-LI-IV	to his dominion
	ID-DI-NU-SUV	He gave him
10.	ZI-IR-RA-ZI-NA	(And) their seed
	A-NA GA-TI-SU	to his hand
	U-MA-AL-LI-SAM	Entrusted it

---

* Broken portion of the stone. † See Note on page 97.

A-NA (Ilu) MARDUK	To Merodach
ILI BA-NI-SU	The god his Creator
IN BAR-ZI-PA (KI)	In Borsippa
ALI NA-RA-MI-SU	His beloved city
BIT-ZI-DA I[ ]	Bit Zida
PARAKKA-SU EL-LAM	his holy shrine
IB-NI-SU-UV	he built it.

EXTRACT FROM A CYLINDER OF NABONIDUS

(W. A. I. v. pl. 64, col. i. 7; ii. 45).

7. BIT KHULKHUL BIT SIN SA KI-RIB AL KHAR-RA-NU
The Temple of Brightness, the Temple of Sin (Moon-god), which is within the city of Kharran,

8. SA ULTU YUMU ZA-A-TI SIN BEL RA-BU-U
Which from ancient days Sin the great Lord,

9. SU-BA-AT DHU-UB LIB-BI-SU RA-MU-U KI-RI-IB-SU
The seat the joy of his heart had raised within it,

10. ELI ALI U BITI SA-A-SU LIB-BU-US-SU I-ZU-UZ-VA
Upon that city and temple, his heart was fixed.

11. NISI SAB-MAN-DA U-SAT-BA-AV-VA BIT SU-A-TIV UB-BI-ID-VA.
The Sab Manda (Barbarians) had come up and this house had thrown down, and

12. U-SA-LU-SU KHAR-MU-TU I-NA PA-LI-E-A KI-I-NUV.
Turned it to ruins. When my reign was established,

13. BEL BEL RAB-U I-NA NA-RA-AM SARR-U-TI-YA
The great Lord Bel, in love of my Majesty,

14. A-NA ALU U BIT SA-A-SU IZ-LI-VU IR-SU U-TA-AI-RI
To this city and temple . . . . directed me—

15. I-NA-RE-ES SARR-U-TI-YA DA-IR-TI U-SAP-RU-H-NI-NI SU-UT-TI.
In the beginning of my long reign. They sent me a dream;

16. MARDUK BEL RABU U SIN NA-AN-NA-RI SAMIE U IRZITIV
Merodach, the great Lord, and Sin, the illuminators of the Heavens and Earth,

17. EZ-ZI-ZU KI-LA-LA-AN MARDUK I-TA-MA-A IT-TI-YA
The Strengthener of all—Merodach communed with me.

18. NABU-NAHID SAR BABILI (KI) I-NA SUSI RU-KU-BI KA
Nabonidus, king of Babylon, with the horses of thy Chariot

19. I-SI AGGURI BIT KHUL-KHUL E-PU-US-VA SIN-BEL RABU
Come up and the walls of the House of Brightness make and Sin the great Lord

20. I-NA KI-IR-BI-SU SU-LU-VA SU-BA-AT-SU
In its interior raise up his seat.

21. PA-AL-KHI-IS A-TA-MA-A A-NA BEL ILANI MARDUK.
Reverently I spake to the Lord of the gods, Merodach.

22. BIT SU-A-TIV SA TAK-BU-U E-PI-SU
This house of which thou hast spoken I will make

23. NISI SAB-MAN-DA SA-KHI-IR TAK-BA BU-UG-GU-LU E-MU-GA-SU
The Sabmanda the tribe of whom thou speakest terrible is their power.

24. MARDUK I-TA-MA-A IT-TI-YA NISI SAB-MAN-DA SA TAK-BU-U
Merodach communed with me. Those SABMANDA Of whom thou hast spoken

25. SA-A-SU MAT-SU U SARRANI A-LIK I-DI-SU UL I-BA-AS-SI
He himself, his land, and the kings marching by his side shall cease to be.

26. I-NA SA-LU-UL-TI SATTI I-NA KA-SA-DU
In the third year in its course

27. U-SAT-BU (?) SUV VA KU-RA-AS SAR MAT AN-ZA-AN ARDU ZA-AKH-RI.
He caused to go forth Cyrus, king of Ansan (Elam), the little servant.

28. I-NA UM-MA-NI-SU I-ZU-TU NISI SAB-MAN-DA RAP-SA-A-TI
With his strong army The widespread Sabmanda

U-SAP-PI-IKH
he swept away.

29. IS-TU-VI-GU SAR SAB-MAN-DA IZ-BAT-VA KA-MU-UT-SU A-NA MAT-SU IL-KI

Astyages, king of the Sabmanda, he captured, and his treasure to his land he took

30. A-MAT BEL RAB-U MARDUK U SIN NA-AN-NA-RI SAMIE U IRZITIV

The will of Merodach and Sin, the illuminators of the Heavens and Earth

31. SA KI-BIT SU-NU LA IN-NIN-NU A-NA KI-BI-TI SU-NU ZER-TI

Who change not their command To their supreme command

32. AP-LA-AKH AK-SU-UD NA-KHAZ-TI AR-SE-E-VA ? LU-KH PA-NU-A.

I bowed, I took hold, the order (?) I gave and . . . . my face.

33. LA-E-GILA-A-SE-ID A-KHI-AD AD-DA U-SAT-BA-AV-VA

Not hesitating, I hastened, I caused to go forth

34. UM-MA-NI-YA RAP-SA-TI UL-TU MAT KHA-AZ-ZI-TI PA-AT MI-ZIR

My wide-spread army from the land of Gaza, on the border of Egypt,

35. TAM-TIV E-LI-TI A-BAR-TI NAHR PURAT A-DI TAM-TIV SAP-LI-TI.

(On) the Upper Sea on the other side of the Euphrates, as far as the Lower Sea.

36. SARRANI RUBI SAKKANAKI U UM-MA-NI YA RAP-SA-A-TI

Kings, Princes, Priests, and my wide-spread army,

37. SA SIN SAMAS U ISTAR I-KI-BU-NU

Which Sin, Samas, and Istar had assembled

38. A-NA E-PI-SU BIT KHUL-KHUL BIT SIN BEL-YA A-LIK I-DI-YA

For the making of the House of Brightness, the Temple of Sin, my lord going by my side,

39. SA KI-RIB AL KHAR-RA-NU SA ASSUR-BAN-APLA SAR MAT ASURI (KI)

Which is within the city of Kharran, which Assurbanipal, king of Assyria,

40. ABIL (DP) ASSUR-AKHA-IDDINA SAR MA ASSURI (KI) RUBU A-LIK MAKH-RI-YA I-PU-SU

Son of Esarhaddon, king of Assyria, a prince my predecessor had made

41. I-NA ARKHI SA-AL-MU I-NA YU-MI I-GAR I-NA BI-RI

In a fortunate month, on a holy day, on a festival (?),

U-AD-DU-NI SAMAS U RAMMANNU

When I had propitiated the gods Samas (Sun-god) and Rimmon

42. I-NA NI-ME-KU (ILU) HEA U (ILU) SILIK-MULU-KHI I-NA KA-KHA-GAL-U-TU.

By the wisdom of Hea and Merodach by the . . . . . .

43. I-NA SI-IP-RI LABANU BEL US-SU U AGGURI

By the instruction of Laban, Lord of foundations and walls

COLUMN II.

1. I-NA KASPI KHURAZI ABAN NI-SIK-TI SU-RU-KU-TU HI-BIS-IS-TIR

With silver, gold, and precious stones . . . .

2. . . . . I-NA KHI-DA-TI U RI-SA-TI

. . . . with joy and gladness.

3. E-LI TI-MI-EN-NA SA(DP) ASSUR-BA-AN-ABLA SAR MAT ASSURI (ki)

Upon the foundation record of Assurbanipal, king of Assyria

4. SA TE-MI-EN-NA SA (DP) SUL-MAN-RIS-TAN ABIL (DP) ASSUR-NAZIR-ABLA I-MU-RU

And upon the foundation record of Shalmaneser, son of Assurnazirpal they looked.

5. US-SU AD-DI-VA U-KIN SAK-NA-AT SU I-NA SIKARI-KARRANI DISPI

The foundation I laid, and established its position. With syrup wine and honey

6. SAL-LA-AR-SU AM-KHA-AZ-VA AB-LU-UL TA-RA-AKH-KHU-US.

. . . . I slaughtered and I mingled its . . . . .

7. ELI SARRANI AB-BI-E-A IP-SE-TI-SU U-DAN-NIN-VA

Over the King, my fathers, its workmanship I made strong,

8. U-NAK-KI-LU SI-BI-IR-SU ESER SU-A-TIV UL-TU TI-MI-EN-SU

And perfected its adornment, that temple, from its foundation stone

9. A-DI TAKH-LU-PI-SU E-ES-SI-IS AB-NI-VA U-ṠAK-LI-IL SI-BI-RI-SU

To its roof, anew I made and completed its adornment.

10. GUZURRI ERENI ZI-RU-TU TA-AR-BI-IT MAT KHA-VA-TU

Great beams of cedar wood, the product of the land of the Hivites

11. U-SA-AT-RI-IZ ZI-RU-US-SU DALTI ERENI

I caused to be spread over it; doors of cedar wood

12. SA I-RI-IZ-SI-NA DHA-A-BI U-RA-AD-DA I-NA BABI

Of which their leaves were good I added in the gateways.

13. KASPI KHURAZI AGGURI SU U-SAL-BIS-VA U-SA-AN-BI-IDH SA-AS-SA-NI-IS

Gold and silver its brickwork I caused to cover, and made it to shine like white marble.

14. RE-I-MU ZA-KHA-LI E-IB-BI MU-NAR-KIP GA-RI-YA

Bulls of polished alabaster, destroyers of my enemies

15. KA-AD-RI-IS UZ-ZI-IZ I-NA AD-MA-NI-SU

Round about I placed in its edifice.

16. SANE (II) SEDI MU-ES-MA-RU SA-PI-IN AI-BI-YA

Two great colossi Guardians sweeping away my enemies

17. I-NA BAB ZI-IT (D.P.) SAMSI SUMEL U IMNI U-SAR-SI-ID

In the gate of the Rising Sun Right and Left I placed.

18. GA-TI (D.P.) SIN D.P. NIN GAL D.P. NUSKU U IL SA-AK ?-KU-MU NUN NA

The hands of Sin, Ningal, NUSKU, and the god SAKKUMUNUNNA ?

19. BEL-E-A UL-TU SU-AN-NA ALU SARR-U-TI-YA

My Lords from Suanna, the city of my royalty

20. AZ-BA-AT I-NA KHI-DA-TI U RI-SA-A-TI

I took hold of with joy and gladness.

21. SU-BA-AT DHU-UB LIB-BI KI-IR-BA-SU U-SE-SI-IB
In the seat of the joy of heart within it I caused to dwell.

22. D.P. NIKI D.P. RI-IKH-TI IB-BI MA-KHAR-SU-NU AK-KI VA
Victims White sheep Before them I sacrificed;

23. U-SAM-KHIR KADH-RA-AI BIT KHUL-KHUL RE-ES-TUV U-SA (?)-LI-MA
I caused to draw near the attendants of the House of Brightness. The opening, I completed?

24. ALU KHAR-RA-AN A-NA PAT GIM-RI-SU
The City of Kharran to its whole extent,

25. KI-MA ZI-IT ARKHU U-NAM-MI-IR SA-RU-RU-SU
Like the coming forth of the Moon, I made bright its splendour.

26. SIN SAR ILANI SA SAMIE U IRZI-TIV SA UL-TU UL-LA-NU US-SU
Sin, the king of the gods of Heaven and Earth, of whom from of old time the foundation

27. ALU U MATU LA IN-NAM-DU-U LA I-TUR-RU AS-RU-US-SU
Of the city and province none had established, none had restored its site

28. A-NA BIT KHUL-KHUL BIT SU-BAT LA-LI-E-KA I-NA E-RI-BA KA
To the "House of Brightness," the Temple, the abode of thy Fulness in thy entry,

29. DAMKA-TIV ALU U BIT SA-A-SU LIS-SA-KI-IN SAP-TU-UK KA
May prosperity be established to the city and this temple from thy lips?

30. ILANI A-SI-BU-TU SA SAMIE U IRZITIV
The gods, the inhabitants of the Heavens and Earth,

31. LI-IK-TA-RA-BU BIT SIN A-BI BA-NI SU-NU
May they draw near to the Temple of Sin, the father their Creator.

32. YA-TI (DP) NABU-NAHID SA BABILI (KI) MU-SAK-LIL BIT-SU-A-TI
As for myself, Nabonidus, king of Babylon, Restorer of this temple

33. SIN SAR ILANI SAMIE U IRZI-TIV I-NA NI-IS I-NI-SU DAMKATI
Sin, the king of the gods of the Heavens and the Earth, in the lifting up of his holy eyes

34. KHA-DI-IS LIP (?) PAL-SA-AN-NI-VA AR-KHI SAMMA NI-IP-KHI U RI-BA-A

Joyfully may he regard me, and each month from beginning to end

35. LI-DAM-MI-IK IT-TA-TU-A YU-MI YA LI-SA-RI-IK

May he favour my desires. My days may he prolong.

36. SATTI-YA LI-SA-AN-DIL LU-KI-IN PA-LU-A

My years may he increase May he establish my reign.

37. (D.P.) NA-AK-RU-TI-YA LIK-SU-UD (D.P.) ZA-MA-NI-A LI-SA-AM-KHIT

My enemies may he seize. My evil opponents may he smite.

38. LI-IS-PU-UN GA-RI-YA D.P. NIN GAL UM ILANI RABATIV

May he sweep away my foes The great Lady, Mother of the great gods

39. I-NA MA-KHAR SIN NA-RA-MI-SU LI-IK-MA-A BA-NI-TI

In the presence of Sin her Lover may she present my works.

40. (D.P.) SAMAS U (D.P.) ISTAR ZI-IT LIBBI-SU NAMRA

Samas and Istar, the bright offspring of his heart

41. ANA SIN A-BI BA-NI SU-NU LI-IK-BU-U DAMKATIV

To Sin the father, their Creator, may they speak favourably.

42. (D.P.) NUSKU SUKAL ZI-I-RI-SU PI-IE-A LI-IS-MI-E-VA

Nusku, his supreme messenger, my words may he hear.

43. LI-IZ-BA-AT A-BU-TU MU-SA-RU-U SI-DHI-IR SU-UM

May he take hold of evil. The inscription, the writing of the name

44. SA (D.P.) ASSUR-BAN-ABAL SAR MAT ASSURI A-MU-UR-VA

Of Assurbanipal, king of Assyria I inspected, and

45. LA U-NAK-KI-IR NI-IZ AP-SU-US NIKI AK-KI

I did not injure. With oil I cleaned. Victims I offered

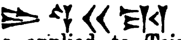
46. IT-TI MU-SA-RI-E-YA AS-KUN-VA U-TE-IR AS-RU-US-SU

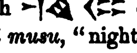
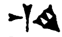
With my inscriptions I placed and restored to its place.

NOTES.

COLUMN I.

Line 9.—*Subat dhub libbi su*, "the seat the joy of his heart." For the use of *dhub* in this sense compare the Hebrew expressions וְלֵבב—טוֹב in 1 Sam. xxxv. 36, and שְׂמֵחִים וְטוֹבֵי לֵב in 1 Kings viii. 66, "Joyful and glad of heart." Compare also the expression in this inscription, Column III., 16, *Mudhib libbi ka*, "rejoicing thy heart."

Line 11.—*Sabmanda*,  This name is first met with in the Assyrian inscriptions applied to Teispes, the Gimmerian who was defeated by Esarhaddon in B.C. 670. It became a general term in the later inscriptions for that mixed body of tribes occupying the land afterwards called Media, composed of the Madai or Medes and Gimirrai or Kimmerians, among whom were the Saki or Scyths and other tribes, of whom, in B.C. 550, Astyages was king until the capture of Ekbatana, here recorded, in B.C. 549. The name is apparently a compound one, derived from ZAB, the construct case of ZABU, "a host," sometimes used for a soldier; Hebrew צָבָא; and *Manda*, "barbarian," which may possibly be akin to the Hebrew נדה "unclean."

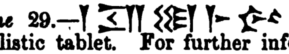
Line 15.—*Sutti*, "a dream," for *Sunte*; Hebrew שֵׁנָה "sleep or dream," as in Psalm xc. 5, "they are as a dream." This word is expressed by the ideograph  composed of  *zibidhu*, "product" or "offering, and *musu*, "night," the dream being the product of the night.

Line 16.—*Nānnari*, "illuminator," for *Nanmari*, from *Namaru*, "to be bright."

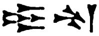
Line 17.—*Izzizu*, for *izizu*, from עָזַז "to make strong." *Kilālan*, an abstract form in *an*, from *kallu*, "all."

Line 21.—*Palkhis*, "reverently" an adverbial form in *is*, from *palakhu*, to worship.

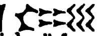
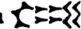
Line 27.—*Arad su zakhari*, "his little servant." Compare the expressions in Isaiah xliv. 28, 45. Nabonidus here looks upon Cyrus as working in the cause of Merodach, by overthrowing the barbarians, but in a lower position than himself.

Line 29.— *Is-tu-vi-gu*, Astyages, so also in the Annalistic tablet. For further information see my paper on "Cuneiform Inscriptions and Jewish Captivity." *Kamut*, "treasure," from *kamū*, "to cover," "to gather together," קָמָה "wealth, that which is collected."

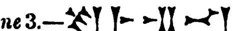
Line 31.—*Kibit*, "command," from *kabu*, "to speak," *la inninnu*, "is not changed." Compare the expression in a hymn to Gizdhubar (S. 1371): *dīnka ul in-nen-ni*, "thy judgment is not changed."

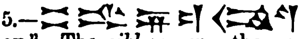
Line 36.—*Sakkanaki*, "priests;"  *Ner-padda*, "yoke servants."

Line 42.—*Nimiki*, "wisdom," from *emuku*, "to have knowledge," "to be wise."

Line 43.—*Sipri*, a conjectural reading; the word can hardly be the same as *sibir*, Col. II., 8, 9.  *Laban*. The sign  is explained by *libittu* for *libintu*, "bricks," from *Labanu*, "to make bricks." The god Labanu is also mentioned in a list of Assyrian gods.

COLUMN II.

Line 3.— *Te-men-na*, "foundation stone, cylinder," &c., literally "that which makes a foundation or line."

Line 5.— *Sikkari karrani dispi*, "syrup, wine, and honey." The *sikkaru* was the same as *sheker*, or drink offering of the Hebrews, sometimes called *sikar satu*, "sikar drink," and is found in all the sacrificial codes of Chaldea, even as early as the time of Gudea, B.C. 2500. In the ordinances of the temple at Babylon, given in the Philips cylinder of Nebuchadnezzar (W.A.I., i. 65) we read. "The portion of the gods of Bit Sagila and Babylon, to each a daily portion prepared. I appointed honey, milk, beautiful butter, and bread made with oil, honey, wine, sweet syrup drink (*sikar satu*), and noble wines.

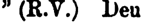
Line 9.—*Takhlupi*, "roof," from חלף "to cover."

Line 10.—*Kharatu*, "Hivites." Delitzsch, in his work, "Wo Lag das Paradies," first points out the identification of *Kharatu*, as distinct from *Amatu*, "Hamath."

Line 13.—*Usanbidh*, "I caused to shine," first person singular, aorist Shaphel of *Nabadhu*, "to shine." *Sassanis*, "like white marble," adverb in *is*, from *sassanu* or *sassu*. The "white marble" of Esther i. 6; perhaps "alabaster."

Line 14.—*Remu*, "bulls," Hebrew ראם, mis-rendered "unicorn" in the A.V. *Munakip*, from *Nakapu*, "to smite," Chaldean נְקַף.

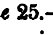
Line 15.—*Kādris*, "round about," possibly from *Kudur*, "a boundary."

Line 16.—=*Sedu*, "colossal figures," the שדים or idols; "demons" (R.V.) Deut. xxxii. 17; Psalm cvi. 37. Applied to the great winged figures, eagle-headed, &c., at the entrances of the palaces, temples, &c.

Line 17.—*Muesmaru*, "guardians," possible from שמר, to watch or guard. Comp. מְשַׁמֵּר, "watchmen."

Line 18.—*Suanna*, "sacred quarter of Babylon;" in a contract tablet (W.A.I., v. 6, No. 2, 2), *irzitiv Suanna* (*k*) *Sa kirib Babili* "Land of Suanna, which is within Babylon."

Line 23.—*Kadhrai*, "attendants," perhaps "incense burners," from קָטַר.

Line 25.— *Arkhu*, "month" in this phrase is used for "moon," as in *Zit Samsi*, "Rising Sun." *Saruru*, "Splendour." *See* Delitzsch, notes on this word, "Assyrian and Hebrew," 55.

Line 28.—*Lalie* or *Lalē*, a derivation from the Akkadian *lal*, "full," the equivalent of the Assyrian *malu*. *Eribi-ka*, "The entrance," from *eribu*, "to descend, to enter."

Line 29.—*Saptuk-ka*, the text reads *Saptas*. This must be an error, as the signs are almost similar of *uk* and *az*. *Saptu*, "lip."

Line 33.—*Ina nis ini su*, "In the lifting up of his holy eyes." Compare the priestly blessing (Num. v. 26), "The Lord lift up his countenance upon thee, and give thee peace."

Line 34.—*Nipkhi u riba*, "Dawn and twilight." In Col. III., 41, of this inscription we have the phrase *Arkhi sama ina zit Samsi u erib Samsi*, "Each month, from rising to setting Sun," which seems to justify this reading.

Line 37.—*Zamani*, "evil opponents." Compare Heb. זִמָּה, "wickedness."

Line 39.—*Narami*, "beloved." *Naram* is a synonym of *Dudu*, Heb. דּוֹד.

Line 42.—*Pie*, "words," Hebrew פֶּה, "month." Often used in this sense, as *Ki pi duppi*, "according to the words of the tablet."

At the conclusion of the paper, the following communications were read:—

NOTES ON MR. BOSCAWEN'S PAPER: HISTORICAL EVIDENCES OF THE MIGRATION OF ABRAM. By the Rev. A. H. SAYCE, M.A., Dep. Professor of Comparative Philology, Oxford.

P. 97. The date of Dungi, the son of Lig-bagas, must be earlier than B.C. 2500. A mutilated passage in a cylinder-inscription of Nabonidus seems to show that his father, Lig-bagas, lived 700 years before Khammuragas, whose date is about B.C. 2280. If, however, Dungi is the same person as a Dungi mentioned on the monuments of Tel-Ho, he will be earlier than Sargon of Accad (B.C. 3800).

P. 98. I reserve what I have to say about the dynasty of early Babylonian kings to the end of this communication, only recording my disagreement from Mr. Boscawen's opinions expressed in his note about the names Ammisatana (or Ammi-ditana) and Ammi-sadúga. A bilingual tablet tells us that these are Kassite and not Semitic names, Ammi-sadúga meaning "the family is established," and Ammi being a weakened form of *khammu* (as in Khammu-ragas), "a family" (Assyrian *kimtu*).

P. 100. Aipir was not another name of Anzan or Susiana, but denoted the plain of Mal-Amir. Khalpirti is "the district of Pirti."

P. 102. Is not Mr. Boscawen mistaken in saying that Kudur-Mabug "claims to be ruler of Sumir (Shinar) and Akkad"?

P. 102. Mr. Boscawen's explanation of Amraphel is very ingenious, but he does not give any reference for the statement that Amar was a name of the Moon-god. I have never come across the word so used. Moreover, the Accadian *pal* is not the equivalent of *baladhu*, "to live"; this is *tila*. *Pal* represents the Assyrian *palu*, "a regnal year," and *ebiru*, "to pass over." If I were to make any suggestion about the name of Amraphel, it would be that it has been corrupted from Amar-gal, *p* and *g* being easily interchanged in the old Hebrew script. Amar-gal would be Amar-Gula, "the glory of Gula," formed like the royal name Amar-Agu, "the glory of the Moon-god," which actually occurs on the monuments.

P. 108. The name of Serug may be connected with the name of Sargani or Sargon (p. 96), in which *ani* is a suffix.

P. 110. Kainuv, "the establisher," can have no connexion with the Biblical Kain, since the latter name is written with an initial *koph*, not with *caph*.

Mr. Boscawen's interesting and instructive paper induces me to put forward some speculations of my own in regard to the early chronology of Babylonia, which, if correct, will make it necessary to modify his dates. The dates he has given on page 98 are derived from Mr. Pinches, the discoverer of the tablets on which the Babylonian dynasties are recorded. The dates, however, are about 160 years too low, as is proved by the Assyrian monuments. Certain kings of Assyria, whose dates are approximately known, were contemporaries of certain Babylonian kings who can be fitted into Mr. Pinches' dynastic list only by raising his dates about 160 years. If this is done, everything fits into its place. With Mr. Pinches' chronology, on the other hand, the Babylonian contemporaries of Tiglath-Pileser I. and his predecessors bear names in the dynastic list which have no resemblance to those recorded in the Assyrian inscriptions. By correcting the chronology, the names and periods coincide perfectly.

The date of Khammu-ragas, consequently, is not B.C. 2120, but B.C. 2280. Now, the dynasty of eleven kings to which he belongs is distinguished by one peculiarity. The first six names are Semitic, then comes the name of Khammu-ragas, which is Kassite, followed by two Semitic ones, and the dynasty ends with three names which are again Kassite, the last of them being a hybrid. This peculiarity gives rise to the suspicion that there was a break in the dynasty, Khammu-ragas being a usurper. On the other hand, one of the dynastic lists expressly calls him a son of Sin-muballidh. In his own Canal-inscription, however, he assigns a different name to his father, and nothing is more common in Oriental history than for an usurping prince to be attached to his predecessors by means of a fictitious descent. In this way the Egyptians claimed Kambyses as a prince of their own. I therefore believe that the Kassite Khammu-ragas was an intruder, his statement in his Canal inscription excluding even the possibility that he was the son of Sin-muballidh by a Kassite wife.

Now, if we compare the dynastic list discovered by Mr. Pinches with the list of Babylonian dynasties quoted by Eusebios and the Synkellos from Alexander Polyhistor who derived it from Bêrôssos, it is pretty plain that the dynasty of Sisku, consisting of eleven kings, corresponds with the nameless dynasty of the Greek writers, which also consisted of eleven kings. Consequently, the preceding dynasty of Babylon, with which the Babylonian annalist begins his list, must correspond not only to the Median dynasty of eight kings recorded by Bêrôssos, but also to part of the preceding Khaldæan dynasty of Bêrôssos. This will explain the difficulty that the kings, named by the Synkellos, seem to be ascribed to both the Khaldæan and the Median dynasties, the Synkellos making them Khaldæan and Eusebios Median. Let us now compare the Greek and Babylonian lists, remembering the amount of corruption as regards names, and more especially numbers, which the Greek account must have suffered in its passage from one author to another.

'Sumu-abi (fifteen years) will correspond to Khômas-bêlos (seven and a half years); 'Sumu-la-ilu (thirty-five years) to Pôros (thirty-five years), where the regnal years agree, but not the names. Pôros was followed by Nekhoubês, or rather Ekhoubês, since the initial *n* seems derived from the last letter of the preceding word *ἐβασίλευσεν*. Ekhoubês is Zabû, who, however, reigned only fourteen years, instead of the forty-three ascribed to Nekhoubês. But the Greek numerals are certainly corrupt, since both Nekhoubês and his three successors are assigned reigns of more than forty years each. Evidently, the cipher "forty" has made its way from one line of the text into another. Nekhoubês is followed by Abios, the Abi(l-Sin) of the cuneiform list. He is given forty-eight years instead of eighteen, through the graphic corruption already explained. Then comes Oni-ballos for forty years, obviously the same name as Sin-muballidh (like Arkeanos for Sargon), the thirty years of Sin-muballidh being again corrupted into forty. Oniballos is succeeded by Zin-ziros for forty-six years, the length of whose reign agrees almost exactly with that of Khammu-ragas, but his name is quite different. Khammu-ragas, however, did not become king of all Babylonia until the conquest of Rim-Sin, the king of Shinar or Southern Babylonia, who allied himself with the Elamites; and my belief is that Rim-Sin is the Zin-ziros of the Greek writers, the two elements of the name being transposed, as in Xisuthros for Adra-khasis. The Synkellos seems to make Zoroaster the leader of the Median dynasty,—a name which is clearly corrupt, and may be transformed from Khammu-ragas. However this may be, the Kassites would naturally be called Medes by Bêrôssos, since they lived in that part of the East which was known to the Greeks as Media. Similarly, he has called the dynasty of Pase Arabian, since (according to W. A. I., ii. 53, 13) Pase was a city of "Cush," or Arabia. I cannot explain why Bêrôssos expanded the five successors of Khammu-ragas into seven, and gave them an additional lease of power of forty-two years.

If Rim-Sin were the legitimate son and successor of Sin-muballidh, he cannot have been the same as Eri-Agu, the son of Kudur-Mabug, as I formerly supposed. On the other hand, the true date of Khammu-ragas, B.C. 2280, exactly corresponds to the date of the invasion of Babylonia by the Elamite king, Kudur-Nakhunte, and Mr. Boscawen has drawn attention to the fact that Khammu-ragas gives the same title, "Lord of Yavutbal," to his Elamite antagonist that Kudur-Mabug claims for himself. Perhaps, therefore, it will be best to adhere to the view first propounded by Mr. George Smith, that Rim-Sin and Eri-Agu are one and the same, and to suppose that Sin-muballidh was overthrown by Kudur-Nakhunte, the result being the Kassite conquest, first of Babylon and Northern Babylonia, and then of

Southern Babylonia also. Kudur-Mabug will have been a younger brother of Kudur-Lagamar, who reigned over Yavutbal (Yatbur) on the eastern frontier of Khaldæa, while Kudur-Nakhunte was the contemporary sovereign of Shushan.

Letters were also received from Professors T. K. Cheyne, D.D., and S. D. Peet, of the United States, remarking on the value of the paper, and the great need of further exploration ; and it is hoped that the remarks of the latter may be amplified and given to the Institute in the form of a paper.

The following letter was received from the Rev. H. G. Tomkins :—

"Park Lodge, Weston-super-Mare.
"January 1, 1885.

"Mr. Boscawen's paper on the Abramic Migration is highly interesting, and I regret that I cannot be present when it will be read.

"In a paper which I submitted to the Institute in April, 1877, and in a book entitled *Studies on the Times of Abraham,* I dealt with this great subject. Afterwards I was delighted to find a very remarkable agreement between the results of my inquiries and those of the Abbé Vigoroux in the early part of his now famous work, *La Bible et les Découvertes Modernes*, of which a fourth and enlarged edition appeared last year.

"Mr. Boscawen has added material and argument of a valuable kind to those already available in support of the historic character of the narrative, and especially has established the very early and influential existence of a dominant Semitic power in the plain of the Euphrates, and shown its bearing on the conditions of Abraham's life.

"I hope the general relations of his paper to the great historic field will be duly and vividly shown in discussion on the subject ; and I feel sure this will be so, since I know that my friend Professor Sayce, as well as Mr. Budge, has devoted attention to its elucidation.

"One thing requires constant advocacy, namely, the urgent need of well-directed excavations in the great city-mounds of Western Asia. Doubtless the ancient Kharran would yield rich spoil, as Mr. Boscawen suggests, and give us connecting links with the great Hittite land across the Euphrates, in the Western track of the father of the faithful.

"The list of very early Semitic proper names (p. 110) is worthy of close attention. May I be allowed to refer to a paper of my own in the *Transactions* of the Institute some years ago, "*On Biblical Proper Names*," in the hope that it may yet be of some use in stimulating the minds of students ?

"Pardon a very trivial note from a busy man on New Year's Day, and with the most earnest good wishes for a good New Year to the Victoria Institute, I remain," &c.

Also a letter from the Rev. Dr. Alfred Edersheim, in which the writer says, "I may be allowed to express my high appreciation of a paper, which is not only full of interest, but the outcome of such extensive acquaintance with the subject."

And a letter from Professor Howard Osgood, of the United States, saying, "I have seen nothing in the paper deserving of adverse criticism ; and I desire to express my great indebtedness to Mr. Boscawen."

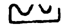
Mr. D. Howard (V.-Pres. Chem. Soc.), writes :—"If at page 120, line 17, the words 'Attributed by these records to Khammurabi' were inserted, it would make the author's meaning clearer. The particular form of vanity of claiming the credit of another's victories, indicated here, is common enough in modern bulletins.

"Abram and Terah did not go alone to Haran, they no doubt took many followers, and it is, therefore, not to be wondered at if we find among them the corrupt worship of the inhabitants of Ur in Haran, and Abram's further migration was sure to enable him to escape more effectually the corruptions of the new settlement at Haran; we find strong evidence that Laban's family were far gone from the primitive faith, and many will suppose that their followers were more so.

"I take it the author's argument is that the national habit of mind which is evidenced in the expression he quotes (top of page 115), is the very same one that degenerated into the Sabæan false worship. Certainly Job shows proof of 'observation of the stars,' and so did the Sabæan idolaters, and the fact deserves to be noted."

Also letters to the same effect from Canon Gibson and others, including one with the remark, "It is interesting to notice that, on p. 99, Aban Samu, '*the blue stone*,' derives its meaning from Aban (אבן) Samu (שמים) 'Heaven stone.' Heaven stone, *i.e.*, 'sky' (or 'sea-blue coloured) stone,' showing the use of the word Heaven, as in Gen. i. for *our* firmament or 'sky.' But can it be proved that Aban Samu and אבן השהם are identical?"

The CHAIRMAN (Rev. ROBINSON THORNTON, D.D., V.P.).—We have to thank Mr. Boscawen for his able and interesting paper, and also Professor Sayce and those authors who have so kindly sent comments thereon. Since Professor Sayce criticises Mr. Boscawen's dates, it is clear that he agrees with his facts. We are very much indebted to Mr. Boscawen for the proof he has given, in this paper, of the correctness of the Scriptures. We know very well that the Scriptures were given, not in order to furnish us with a history of the Akkadians or Babylonians, but to instruct us in the grand scheme of salvation; and therefore we do not expect definite history or any regular chronological system; but we should expect, *à priori*, from the Divine Being, that where we have any history given to us it should be quite correct. Now, it is proved by reference to the ancient Egyptian and other monuments, especially some of those that have lately been disinterred, that where statements on the points to which they relate are put before us in the Book of Revelation they are absolutely correct. After the way in which we have been assailed from all sides, it is refreshing to find that the historical argument, as alleged against the Bible, must be dropped: for, wherever we compare the Scriptural statement with the monumental records of the earlier nations, we find that statement proved to be accurate. As regards Chedorlaomer, or, as the Septuagint gives the name, Χοδολλογομόρ, it is worthy of remark that the late Dr. Arnold, who did not always insist on Scripture being interpreted in a literal manner, referred to this passage as containing real and definite history. That was fifty years ago. While, however, many agree with Arnold's view, some may hold a different opinion, and perhaps some of those who are acquainted with the subject will favour us with a few words thereon.

Mr. E. A. W. **Budge**, M.A.—I have just one or two observations to make on Mr. Boscawen's paper. The life and times of Abram are extremely interesting and important in more ways than one; and I think the most important point of view from which we may regard this subject is that which enables us to see that the volume of collateral evidence we are now enabled to produce is amply sufficient to prove the statements contained in the Book of Genesis to be correct. With regard, however, to Mr. Boscawen's paper, I think there are a few passages which more careful revision will have the effect of rendering more accurate. For example, the author refers, on page 95, to the "Home royalty of the flat plains of the Nile valley." This, I fancy, is a slight mistake. He also says the sign given, , refers to mountain peaks; this I do not object to, although the word *Set* means any country which is not the native country, and does not particularly mean mountain country. Again, Mr. Boscawen refers to the discoveries of Dr. Paul Haupt and M. Lenormant, in the Akkadian language. It is well known that, as far back as the time of Edwin Norris, it was discovered that there was a double dialect in Akkad, and in 1870 Professor Sayce pointed it out very clearly. In fact, every student of the volumes of cuneiform inscriptions published by the British Museum must have found it out. Dr. Paul Haupt has since claimed the discovery as his own entirely, whereas the truth is that three or four English scholars found out this fact as to there being a second dialect, and Mr. Pinches, of the British Museum, wrote a label for the tablet to be exhibited in the Assyrian gallery two or three years before Dr. Paul Haupt came to England. The real state of the case being that Dr. Paul Haupt came here and put together all the statements on the subject, and upon that founded his claim to the discovery. This view of the case was held by Dr. Hommel, who stated it publicly. An action was brought in a German law court by Dr. Haupt to prove that Dr. Hommel had misstated the case. The decision of Germany was given in Dr. Paul Haupt's favour; but I do not think it will stop there, and it is, perhaps, as well to give these facts here, so that those who have not gone very fully into the question may know how it stands. Again, Mr. Boscawen speaks of "the mode of reading the characters from left to right," but he omits to state that the Ethiopic reads from right to left. Curiously enough, the Assyrian and the Ethiopic have many points in common, but this particular method of reading from right to left is important, and the question has to be determined, how did it arise? On page 96 of the paper, there is, as I think, a misprint. It is stated in a note that "the date of these inscriptions rests upon a statement, twice repeated in cylinder inscriptions, of Nabonidus, King of Babylon (B.C. 555–538)." That date should be 530. With regard to the list of names Mr. Boscawen gives, there are some mistakes, and, as every name we can find in the tablets which can also be found in the Bible is extremely important, I am sorry Mr. Boscawen has not put down many more names that he knows to be correct, instead of those which are doubtful. He might have given names for instance, like Methuselah and a large number of others. I must also disagree with the interpretation he gives to "Nahor"; I do not think it means "the snorter," and I disagree with the statement that it is the "name given to the dolphin." Again, on page 107, reference is made to the Hyksos invasion. I think it would be safe to say that that invasion lasted about 400 years, but when it began it would be impossible accurately to determine. There is strong evidence as to when it ended, but the question when it began is a very difficult one to solve. Then, as to page 120, where Mr. Boscawen sums up his conclusions, there is a great deal more that he could have put down, and which I hope he will give us before the paper is reprinted. There are many passages he might have given,—one, for instance, in reference to the most characteristic act of Abram, in regard to the purchase of the field. I looked in vain through the paper to find mention of tablets, such as we now possess, recording sales of land, the terms of which, and even the witnesses thereto are given; this I consider would have been a very important illustration, which ought to have been included in the paper. I have no doubt Mr. Boscawen will rectify these omissions, and I know that he can, for he will remember that I have worked with him on tablets the inscriptions upon which record the sale of some of these plots of land. There can be little doubt that, as Abram bought the field, it was made sure to him; and it is moderately certain that the bargain or transaction which then took place was, I will not say in the Hittite language, but in the most important language of the country, which was, probably, the Babylonian. As to the inscriptions at the end of the paper, I will not go into them. They are more for one's private study than for general discussion at a meeting like this. With regard to the remarks by Professor Sayce, I would point out that he says "the name of Serug may be connected with the name of Sargani or Sargon, in which *ani* is a suffix." I must differ from Professor Sayce here, for I do not think it probable. Then, as to the form of the word itself, it is very important that it should be discussed; and there are many people who deny that the object, upon which the name is found, belongs to the time of Sargon I. I think Professor Sayce himself is not certain about the matter; but there can be no difficulty about the spelling of the name, and if it were written in Hebrew it could not be written in any other way than it is written in Isaiah, סַרְגוֹן — "Sargon." Of course, Professor Sayce is quite right about "Kainuv, the establisher," having no connexion with the Biblical Kain; but this is probably a slip on the part of Mr. Boscawen. In other respects, I think the Victoria Institute is to be congratulated on this paper. If we want confirmatory information about the early statements of the Bible, we must go to the Babylonian documents, and Mr. Boscawen has gone to the tablets that have been dug up in Mesopotamia for it. Eastern scholars generally, and especially students of the cuneiform writings, care most for the text of such inscriptions as may be rescued; but the more these things are studied in a broad and liberal way—

the more societies like this do to spread a knowledge of what is done—the more service will be rendered to the cause of religion generally, and the sooner will truth gain the day. I think that no one who reads these evidences in anything like a proper spirit will doubt what is said about Abraham in Genesis, and, now that criticism on Biblical subjects is so strong, it is very important that that criticism should be met, as far as possible, by testimony of an independent character. Babylon has been partly excavated; but a great deal yet remains to be done, and at a meeting like this it is a fitting opportunity for urging the necessity of continuing the excavations that have been carried on there and elsewhere; for, if this be not done, the records obtained from the tablets remain incomplete. If we look at the Deluge tablets, as they are called, we see that they are only very fragmentary. They are made up of fragments, many of them are not so big as one's hand, others not so big as half a hand; and there is no doubt that, where we have only halves, the other halves are yet to be dug up. If we had Mr. Rassam here, he would tell us more about it. I have merely thrown out the suggestion as one deserving consideration. Meanwhile, I offer my thanks to Mr. Boscawen for his able and interesting paper.

Rev. W. Wright, D.D.—I shall not venture to detain the meeting at any length, but would prefer to limit myself to congratulating this Society and Mr. Boscawen on the way in which the paper he has read has been received, not only here to-night, but by scholars who are thoroughly acquainted with the subject of which it treats, who have received proof copies previous to this meeting taking place. The general agreement of Professor Sayce, and my friend Mr. Budge, with the chief points of the paper gives ground for satisfaction. I think, after what we have just heard, we may continue to repose confidence in the old Book. When certain discoveries are made, men are found rushing into the "Temple of Truth" and declaring that the old fabric is falling to pieces. By-and-by, scholars examine the evidence, and find that, after all, it really bears out and confirms the testimony of the Scriptures. We are here to-night on what is really the battle-field of Biblical questions. Any of those present who have read the article by a devout and good man in the January number of the *Expositor* will admit that Mr. Boscawen has made his appearance on the very battle-ground of the present day. We are now dealing with scientific inquiry into facts; and I think that one of the most satisfactory statements in Mr. Budge's speech was that in which he drew our attention to the fact that Mr. Boscawen had not brought forward all the evidence he might have adduced —that, although he had furnished an amount of testimony that was very satisfactory, there was a still greater store of evidence to be divulged. I would here refer to what Rev. H. G. Tomkins calls the "Hittite land." There is in that part of the East a great vista of mounds that have yet to be explored. Indeed, one can hardly realise the richness of the artificial remains covering the whole of that country. At present we are only getting a few grains, but, by-and-by, we look forward to the realisation of a full harvest. There was one point referred to in Mr. Budge's criticisms on which I should prefer to take the side of the paper, and that is, as to the lack of tablets referring to transactions like that at Hebron. The lack of evidence and tablets cannot be here used in argument. Whatever may have been the practice in Babylon and Chaldea as to drawing up tablets, it is quite certain that the transaction at Hebron was carried out as narrated just in the same manner as similar negotiations are managed at the present day. The same custom has been going on in that land from time immemorial. Dr. Thomson, who knows the manners and customs of the people of Syria and Palestine better than any living man, refers, in *The Land and the Book*, to the transaction at Hebron, in which he sees all the processes of a modern bargain. "By these means," he says (vol. i. 249), "the operation, in all its circumstances and details, is known to many witnesses, and the thing is 'made sure' without any written contract. In fact, up to this day, in the very city of Hebron, a purchase thus witnessed is legal; while the best drawn deeds of a modern lawyer, though signed, sealed, and attested, would be of no avail without such living witnesses." We have to thank the Institute for bringing forward this subject. While art and science in this country are patronised and pampered, archæology is neglected, notwithstanding the startling discoveries which patient, unrewarded research is steadily bringing to light."

After some criticisms from M. BERTIN,*

A VISITOR said: I desire to ask a question for the information of those who are not so learned on these subjects as some of the speakers. Is there any confirmation of Mr. Proctor's statement ascribing the Abramic visit to Egypt to the time of the building of the Great Pyramid, basing his view on the astronomic period at which the Great Pyramid must have been built, namely, 3300 B.C.?

Mr. W. ST. CHAD BOSCAWEN.—I only wish to make two or three remarks, in closing this discussion. With regard to what Mr. Budge has said about the commercial tablets, I would point out that this paper deals almost entirely with the migration of Abram, and therefore I omitted everything relating to the time after Abram arrived in Canaan, intending at some future time to continue the study of the monuments in relation to early Hebrew history. With regard to the comments of Professor Sayce, I may state that I did not see them until this morning, and therefore, I have not had time to give the consideration to them that

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* M. Bertin desires that the following may be taken as giving the substance of his remarks :—

"M. Bertin said that the interesting paper of Mr. Boscawen was certainly very ingenious, but, unfortunately, many of his conclusions are established on doubtful facts, which no doubt he would have rejected if he had examined them carefully. The lecturer, for instance, says that the camel is designated as 'the animal with two humps,' but the cuneiform ideogram says 'the animal of the sea.' The mistakes of transcriptions, which he is well able to avoid, are numerous; there are for instance seven mistranscriptions in the they deserve. I noticed, however, that in one or two cases he seems to have misunderstood what I have stated. In regard to his remark connecting Serug with Sargon, I agree with Mr. Budge, and should certainly not have identified the name with that of Sargon myself. M. Bertin has criticised my paper closely, and I thank him for having bestowed so much attention upon it, and, although I differ from him, I must point out that not only does he disagree with me, but he also is opposed to other Assyriologists, including Dr. Delitzsch and Professor Schräder. With regard to the question of the diorite, M. Bertin would seem to doubt its use in Chaldea. Such being the case, I think there is strong evidence, and it certainly was, as Mr. Flinders Petrie has proved, in use by the early pyramid builders, and I do not see why it should not have been in use in Chaldea. I have read the remarks of Sir Henry Rawlinson, which refer to the land of Magan; but they fail to convince me. If Sir Henry Rawlinson can show a land which has diorite and porphyry in its mountain ranges, and which has copper and turquoise mines in its boundaries, I am willing to believe him; but the resemblance of the Egyptian name Mafka to that of the turquoise, and the fact that Professor Sayce and M. Lenormant both identify the land of Magan with the Mafka, or turquoise land, is, to my mind, a strong argument in favour of its being the Sinaitic peninsula of the Egyptians,* and not the land of the Persian Gulf. I should add that this paper was finished in June, and since then one or

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inscription of Eri-aku. The lecturer accepts too easily statements which are not proved, though generally accepted—as the identity of Agade or Agane with Akkad, the Akkadian origin of the civilization and writing, &c. The identity of the four kings mentioned in the Bible with those as yet found mentioned in the inscriptions is also very doubtful; to obtain a similarity of names the author has to translate two of them. One thing is certain, that is the non-Semitic origin of the dynasty of Dintir-ki, in which appears the name of Khammurabi, as the Babylonians themselves give us the translation of this name; the lecturer, however, gives this name as Semitic. It seems impossible also to admit that the father of Khammurabi was the vassal of the King of Elam, an assumption which nothing as yet supports. It is also doubtful that Gudea ever ruled over Sinai, and that he brought from this district the stones for his statues; the carriage of great blocks of stone across the desert seems impossible. These stones come more likely from the other Malukhkha, on the Arabic coast of the Persian Gulf, as shown by Sir H. Rawlinson. As for the names of the Patriarchs, it was more rational to see in them allegorical and not personal names, many of them having probably been given after the birth of the individual. M. Bertin, after having referred to several other parts of Mr. Boscawen's paper, added that his critics do not destroy the historical character of Abram. The mistake is to look for this period so late as Khammurabi; the age of Abram is no doubt several centuries before. The Assyriologists are always glad to see any subject connected with their study investigated, for truth cannot suffer by discussion, and now what they discover too often remains unknown to the general public."

* Since this was written, Professor Hull, in his report of the geology of the peninsula of Sinai, mentions the existence of rock formations of diorite and porphyry in that region.

two things have occurred which might have caused some slight alterations in what I have written. With regard to Professor Sayce's remarks on chronological points, you all know that these are troublesome questions, and I am inclined to place more dependence on the evidence of the monuments than on that of the Greek writers to whom he appeals. The subject is one on which our knowledge is growing day by day, and very often a statement or discovery by a brother Assyriologist upsets a theory we may have been working out for years. Assyriology is not a full-grown science as yet, though it is continually growing in importance, and one can hardly take up a commentary or any work on Biblical matters which does not make use of the work Assyriologists have spent their lives in producing. I do not doubt that there are many things in my paper which will have to be altered; for I do not think that any one can at the present time write a paper on Assyriology that will be a standard work for more than a few years. The question of further excavations, which has been touched upon by several speakers, is a most important one. In regard to matters bearing on the early days of Chaldean and Jewish history, the excavations already made have far exceeded in their results anything we could ever have expected; but there are still many buried cities closely connected with early Biblical history, still hidden under mounds that have comparatively been but scratched. Some of these cities are of the greatest antiquity and importance, and I hope the day is not far distant when the spade may rescue treasures of even greater value than those Mr. Rassam has obtained from the city of Sippara. I have urged, in the name of this Society, the question of proceeding with these investigations as one that ought not to be allowed to drop, and I venture to think that we shall yet be able to stir people's minds to a due sense of the importance of such a work. I must thank the meeting for the way in which my paper has been received, and I have also to thank those who have spoken for the attention they have paid to it before coming here to-night. The subject is one on which we may differ to some extent, but all will agree as to the importance of the proof of the historical character of the Migration of Abram from Chaldea; therefore, I heartily thank those who do not entirely concur with me for the interest they have shown in the matters discussed. In reply to a question put to me with regard to the origin of the Hebrew language, I must leave that to those who have studied the connexions of the Semitic and other languages more closely than I have. I am afraid that Mr. Proctor, like some others, has elaborate theories which often are found to run directly in the face of monumental evidence. We cannot connect the Pyramids with the time of Abram, for long before he left Chaldea these towered their heads over Egypt.

The meeting was then adjourned.

NOTE.—Professor Sayce writes to say that he has been slightly misunderstood (p. 140); he did not *identify* Sargani and Serug, but thinks their common origin will be recognised by every Semitic scholar. He adds, in reply to another remark, that there are four ways in which Sargon could have been written.—ED.

ORDINARY MEETING, JANUARY 18, 1886.

THE REV. R. THORNTON, D.D., VICE-PRESIDENT, IN THE CHAIR.

The Minutes of the last Meeting were read and confirmed, and the following Elections were announced :—

MEMBERS :—The Right Honourable Sir C. Murray, K.C.B., France ; H. P. Malet, Esq., E.I.C.S., F.R.G.S. London ; Stafford C. Northcote, Esq., London ; Rev. A. H. Kellogg, M.A., D.D., London.

LIFE ASSOCIATE :—A. Nevé, Esq., F.R.C.S., India.

ASSOCIATES :—Rev. Lloyd T. Jones, M.A., Wellingborough ; Rev. J. MacGregor, D.D., New Zealand ; Rev. Prof. Howard Osgood, D.D., United States ; The Ven. Archdeacon T. Vincent, Canada ; M. Le Pasteur J. Walther, Switzerland.

A paper on a Samoan Tradition of Creation and the Deluge was then read by the author :—

The AUTHOR (Rev. T. POWELL, F.L.S.).—I may state, by way of preface, that Samoa is the vernacular name of the group in the South Pacific better known as the Navigators' Islands. This name was more appropriate a hundred years ago than now, because, at that time, some of the people used to sail to all points of the compass in large double canoes. Guided by the stars, they went north, east, south, and west. Hence it is that the royal family of Makea, of Rarotonga, in the Harvey Group, claim relationship with the family of Sali'a on Manu'a whose malae, or forum, is named also Rarotonga. He went with a retinue of some two hundred in an easterly and southern direction till he arrived at Rarotonga, 800 miles off. He found the tribes at war. The party at the harbour offered him the kingship in case of victory if he would help them against the other party. The offer was accepted ; the victory gained, and hence the relationship between the two distant tribes. On their excursions they were often drifted away to some unknown group, and hence we find people of Samoan origin north, south, east, and west of their own group. The ancestors of the inhabitants of the Tokelan and Ellice Groups all came from Samoa as well as those of the male side of the Gilbert Islanders. The Samoan Group itself lies between 169° 24', and 172° 50' long. W., and 13° 30' and 14° 20' lat. S. It consists of ten inhabited and two uninhabited islands. To the east are three islands known as Ta'ū, Olosenga, and Ofu, called collectively Manu'a. Sixty miles to the west we have the island of Tutuila, seventeen miles long by five broad, with the fine land-locked harbour of Pangopango on its southern side. There is a small island named Aunu'u off its eastern point. Thirty-six miles further to the west we come to Upolu, which is forty-four miles long by fifteen in breadth; and the most important island of the group, both commercially and politically. About midway down its north side is the harbour of Apia, the seat of government, the residences of the British, German, and American consuls, several large mercantile establishments, an important station of the London Missionary Society, and a large Roman Catholic establishment under the control of a bishop and a considerable staff of French priests. Twelve miles further down is the Malua College of the London Missionary Society, with over one hundred students for the Christian ministry. Off the east end of this fine island are three islets, two of which have a few inhabitants. The largest and most westerly of the group is Savai'i, about forty-eight miles long and twenty-five broad, with a mountain peak six thousand feet high. This lies twelve miles west of Upolu, and between the two are two smaller islands named respectively Manono and Apolima. The former was some years ago of great political importance. The physical aspect of these islands is very beautiful. They are characterised by mountain peaks, ridges, and spurs often reaching nearly to the water's edge; precipices and rugged rocks from which and over which rush silvery waterfalls; sea-worn caverns and, in many places, reefs encircling lagoons, the sea breaking over the reefs and on to the rocks in majestic splendour; and the islands themselves are for the most part clothed with beautiful and very varied vegetation from the mountain peaks to the water's edge. The people who inhabit these beautiful islands are a very fine race. A finer race cannot, perhaps, be found upon the face of the globe. They are of light copper-colour complexion, and well-formed; dark eyes, straight hair, good teeth, and average height probably not less than five feet eight inches. The native population numbers about 35,000, which is an *increase* of about 1,100 in forty years. They are of Asiatic origin, and, in my own opinion, of Hebrew descent; the language is essentially Semitic. This would have been evident at a glance to any philologist, had the missionaries, who gave the people *signs for their sounds*, have given Hebrew letters instead of Roman. Only fifty-six years ago these people were in heathen darkness. "They had gods many and lords many, in a remarkable system of zoolatry which prevailed, linking them on alike to the Asiatic continent and to the animal worship of the ancient Egyptians."* Now, they are all professedly Christians, about one-fourth also seeming to be true believers in our Lord Jesus Christ, accepting Him as their Saviour, the Holy Spirit as their guide, and the Bible as their rule of life. Two hundred of them are ordained pastors. Their religion is supported entirely by themselves, and, in addition to this, they send *voluntary* contributions to the funds of the London Missionary Society, as a token of gratitude for the blessings received through its missionaries, to the amount of between £1,000 and £1,500 a year. As above mentioned, this Society has a training institution at Malua, from which many trained missionaries go to distant lands in the South Seas; it has also, at the port, an English school for half-castes and natives.

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* See a deeply-interesting account of "Fifty-six years' work in Samoa, by Dr. Turner, in *Missionary Chronicle* of London Missionary Society for January, 1886.

I have thought it right to make these preliminary remarks, in order that those I am addressing may be able to understand something about the people of whose traditions I now give a specimen:—

A SAMOAN TRADITION OF CREATION AND THE DELUGE. By Rev. T. Powell, F.L.S.

THE Samoans* are very tenacious of their traditionary myths. This may partly account for their being so little known. There reside, on most of the islands of the group, one or more families who are the descendants of the hereditary keepers of these myths. The office seems to answer to that represented by the *Mazkir* (מַזְכִּיר) of the kings of Judah (2 Sam. viii. 16). See the Samoan rendering.†

On the largest island of the Manu‘a cluster of Samoa, there resides a family whose office it has been, from time immemorial, to guard these myths with sacred care, and, only on occasion of a royal tour, to rehearse any of them in public. They were taught to the children of the family with great secresy, and the different parts of a myth and its song were committed to the special care of different members of the family; so that a young man would have the special care of the prose part, and a young woman that of the poetic part, while to the older members, and especially the head of the family, belonged the prerogative of explaining the meaning of the various allusions of the poetic lines. A single line would often bring out a lengthy piece of history. The following tradition with its song were obtained from this family.

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* For the information of such readers as may not be acquainted with the particulars of the Samoan Group, I may mention, that it lies between 169° 24′ and 172° 50′ west longitude, and 13° 30′ and 14° 20′ south latitude, and consists of ten inhabited islands. The principal of these are, Táū or Manu‘a-tele at the eastern extremity; Tutuila, sixty miles to the westward; Upolu, thirty-six miles west of Tutuila; and Savai‘i, the largest and most westerly of the group. The entire population is 34,000.

† Fatua‘i-upu, Tradition treasurer. They are called in Samoa *Faletal*—History families.

There exists in the native mind a great desire to know these sacred myths, and offers are often made to exchange myths, or, as the natives say, to buy one myth with another. But deception is generally connected with this kind of thing. In such cases, something is often added to or omitted from the original so as to mislead. Sometimes an account is fabricated for the occasion. In order, therefore, to the verification of any mythic piece of history, it is necessary to obtain its SOLO. This is a poetic composition which contains references, somewhat occult, to the leading events of the myth, and which is supposed to settle any point in dispute. A disputant, therefore, may demand from the narrator the recitation of the solo, saying, "Ta mai le soifua," which, given freely, may be rendered, "Demonstrate its life" or right to existence.

We now give a specimen of each. The myth is entitled

THE TRADITION OF THE ORIGIN OF SAMOA,

and is as follows:—

Tagaloa[*] is the god who dwells in the illimitable void. He made all things. He alone [at first[†]] existed. When there was no heaven, no people, no sea, no earth, he traversed the illimitable void; but, at a point at which he took his stand, up sprang a rock. His name is Tagaloa-faatutupunnu, (*i.e.*, Tagaloa—Creator; literally the People-producing Tagaloa), because he made all things when nothing had been made. He said to the rock, "Divide!" and thereupon were born, in immediate succession, the reclining rock, the lava rock, the branching rock, the porous rock, the red-clay rock, the standing rock, and the cellular rock. Tagaloa then, looking towards the west, said [again] to the rock, "Divide!" He then smote it with his right hand: the rock divided on the right, and immediately the earth and sea were born. That [the earth] is the parent of all the men [mankind] in the world. The lava rock was then flooded, and the reclining rock said to it, "Blessed art thou in the enjoyment of thy sea"; to which the lava rock replied, "Bless not me, for the sea will reach unto thee also." And thus it was with all the rocks.

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[*] The g in the Samoan orthography represents the sound of *ng*, as heard in the word si*ng*. Tagaloa, therefore, should be pronounced Tá-ngă-löă (a, as in father). The meaning of this name is, perhaps, the Unrestrained, or Illimitable one, from *tánga*, which means *unrestrained by tabu*, and *loa*, *continuously*. It has been suggested that this is possibly from the Arabic تناله (Tangala).

[†] Throughout both the prose account and the solo, any words added to bring out the sense or to complete a stanza, which are not in the original, will be enclosed within brackets thus [at first]. The tradition will be given as literally as possible; and the translation of the solo will faithfully represent the meaning of the original, and, for the most part, will be nearly literal.

Tagaloa then turned to the right, and the fresh waters arose. Tagaloa again said to the rock, "Divide!" and the heaven [sky] was born. Again he spake to the rock, and there were born in succession Tui-teʻe-lagi [the heaven-raising-king], immensity and space, and the palm of clouds.[*] He spake again and the male and female abysses were born, named Luao [the hollow abyss] and Luavai [the abyss of waters]. Again Tagaloa spake to the rock, and there were born in succession Aoalala [a branching zoöphyte], a male, and Gaʻogaóoletai [a coral rock], a female; also tagata [man], spirit; heart; will and suspicion.

This completes the list of the progeny produced by Tagaloa from the rock. But they were only floating on the surface of the sea, no stationary place had been assigned them.

Tagaloa and the rock then made the following appointments:—

1. To heart, spirit, will, and suspicion he said, "Enter ye into man." This is the cause of man's intelligence: He was named Fatu-ma-le-Eleele [*i.e.*, Rock-and-the-Earth]. This was the first human pair; Fatu (Rock) was the female, and Eleʻele[†] the male.

2. To immensity and space he said, "Come, ye, and be united above, and let the palm of clouds be your child." They therefore ascended, but there was only an immense void,—there was nothing upon which the sight could rest.

3. To the abysses of void and waters he said, "Go ye, and people the regions of the waters.

4. Let the zoöphyte and the coral rock produce the inhabitants of the sea.

5. Let Fatu-ma-le-Eleele people this side [where the earth is].

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[*] This seems to compare the clouds to the spreading leaves of the graceful cocoa-nut tree.

[†] This, be it observed, is the Samoan form of the Heb. אֶרֶץ=Ch. and Syr. אַרְעָא or אֲרַע.

6. Then said Tagaloa to the heaven-raising-king* [Tui-te‘e-lagi], "Come, and raise the heaven." He raised it up, but down again it fell. Tui-te‘e-lagi then went and brought the Masoa [the Polynesian arrow-root plant, Tacca pennatifida], and the Teve [an aroid plant, Amorphophalus campanulatus, *Seemann*], for these were the first of all vegetable growths. With these he succeeded in raising the heaven,† and there it is a resting-place for the vision; but previously there was none, but only the void of immensity and space.

Immensity and space gave birth to day and night,‡ and Tagaloa appointed that this pair should people the face of the heaven, and that Immensity and Space should people the boundless void. They gave birth to another heaven, which Tui-te‘e-lagi elevated, and this became the *second heaven.* This second heaven was peopled also by Immensity and Space. In like manner they gave birth to and peopled seven other heavens, which were elevated by Tui-te‘e-lagi, and were named respectively the third, fourth, fifth, sixth, seventh, eighth, and ninth heaven.

This completes the list of the progeny of Immensity and Space.

Tagaloa the Creator then sat down, and produced Tagaloa the Unchangeable, and Tagaloa the Visitor of the Peoples, and Tagaloa the Prohibitor of the Peoples, and Tagaloa the Messenger,§ and Tuli and Logonoa.||

Then Tagaloa the Creator said to Tagaloa the Unchangeable, "Be thou king of heaven!"

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* Throughout Polynesian mythology there is a reference to the close approximation of the heavens and the earth, and I would suggest whether we have not herein a reference to the chaotic state described in Gen. i., and to the comparative renewal of that state at the deluge. Gen. vii. Tuite‘e-lagi may be a personification of God's energy, by which the second day was characterised. Gen. i. 6–8.

† Lagi = Rangi = רָקִיעַ, with Koph and Ayin coalesced.

‡ Ao = אוֹר, day; Po, night—from Hebrew פּוּן, to set (as the sun), to be darkened: in pouliuli, dark, we have the union of פּוּן and לִין and חוּם, black.

§ These three names, Tagaloa the Visitor, Tagaloa the Reprover, and Tagaloa the Messenger, appear all to belong to one and the same deity, since all that is included in them is exercised by the messenger alone; and the history nowhere else makes any reference to any other deities as distinct from Tagaloa the Creator, Tagaloa the Unchangeable, and Tagaloa the Messenger.

|| Tuli, pronounced Turi, *i.e.* to͡ore͡e,[1] is the name of the bird whose form

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[1] Pease represents these as *oo* in too, and *re* in regent.

He then sent Tagaloa the Messenger to visit all the heavens, beginning at the highest, and to call an assembly of all their inhabitants in the ninth heaven, and announce that Tagaloa the Unchangeable was now their king. In fulfilment of this commission, calling at each heaven in succession, he descended to the first heaven, the region of Day and Night. He asked them whether they had fulfilled their appointment to people the face of the heavens. "Yes," was their reply; "behold the black hemisphere of the heaven, and the bright hemisphere of the heaven,* and all the stars. These are our children, all in their places; and we have four yet unappointed

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Tagaloa the Messenger assumed when he went on his visits to the earth, and in which, especially, he flew backwards and forwards over the wide waste of waters. See l. 12 of the Solo.

Philologists will at once perceive the identity of this name with that of the dove sent forth by Noah from the ark,—תּוֹר, tor. It is most remarkable also that the Heb. verb, תּוּר, toor, to travel, to explore, &c., expresses the very ideas attached to the offices of this god. This compares with Gen. i. 2, "The Spirit of God moved upon the face of the waters."

The bird to which the Samoans attach the name Tuli or Turi is the sea-plover, Charadrius fulvus, *Geml.*, and it is distinguished, at Manu'a, from similar birds, as the turi of Tagaloa.

This identity of the Samoan turi and the Hebrew tor being established, we have the clue to the other name coupled with Tuli, viz. Longonoa.[1] *Noa*, in which this name ends, simply means, in Samoan, unrestrained, set at liberty. Here, then, we have the Unrestrained-Longo, or Rongo, as it is given in the Eastern Polynesian and New Zealand dialects.

We read in the Hebrew text of the Bible[2] that Noah sent forth from the ark אֶת־הָעֹרֵב, the ngorev. Here, then, we have only to transpose the consonants, and we have Rong-ev; but Gesenius points out that ב (v) is no part of the root. Therefore we have an identity between the Samoan and the Hebrew which philologists will at once recognise.[3] Hence, in these two names, we have a reference to the birds which were sent forth by Noah from the ark.

This will explain the origin of the worship of 'Oro in Tahiti and of Rongo, which was one of the principal gods of the Harvey Group. See Williams's *Missionary Enterprises*, ch. vii., where we read that Rongo was called "*the man-eater.*" In this name it is possible that we have a reference to the sarcophagous propensities of the crow tribe.

It may perhaps be only right to remark, that hitherto no writer seems to have observed this origin of these names.

* Referring probably to the different appearance of the heavens by night and day.

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[1] See note, supra, on previous page. [2] Gen. viii. 7.

[3] Especially as in Tahiti the name is 'Oro=עֹרו.

to any sphere. Their names are Manu'a and Samoa,* and the Sun and the Moon."†

The Messenger informed them that these four must ascend to the ninth heaven to attend a council of Tagaloa the Unchangeable, who was now their king, and to receive their appointments, and that they themselves must accompany them.

The council was held in the ninth heaven, and its seat is called the *Forum of Tranquillity.*

At the council, the progeny of Immensity and Space, who occupied the eighth heaven, were appointed architects. There were some ten thousand of them, and they were all named Tagaloa. They then erected a palace, for Tagaloa the Unchangeable, which was named "Le-Fale-'Ula" [the Crimson Palace or Palace of Joy].

Then said Tagaloa the Creator to Night and Day, "Let those two youths, Manu'a and Samoa, descend and be the rulers of the progeny of Fatu-ma-le-Eleele, and their names shall be appended to the royal title of Tagaloa the Unchangeble, who is king of the ninth heaven. He was, therefore, entitled King of Manua-tele and all Samoa.‡

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* These names, Samoa and Manua, it is stated, were given on account of difficulties attending the birth of these two, offspring of Day and Night. The one was arrested in its birth just below the thorax at the part called the *moa;* hence he was named Satia-i-le moa ; *i.e.* arrested or torn at the moa ; contracted into SAMOA, and still farther contracted into MOA, which is the ancient hereditary name of the king of Manua. Hence has arisen the statement which has been already published in the *Chronicle of the London Missionary Society,* April, 1868, p. 66, that since SA is a particle which, prefixed to a proper name, means "THE FAMILY OF," therefore SAMOA means "THE FAMILY OF MOA." This is, doubtless, the true meaning of the name, indicating that the first party of the progenitors of this people, who arrived at these islands, was headed by a chief named MOA. It is stated at Manua, that the name *Samoa* belongs also to surrounding groups, since all are the family of Moa. This is probably true to a certain extent.

There are other accounts on Upolu of the origin of the name which are much more mythic, and which need not be given here. They may have been concocted on Upolu.[1]

When the other child of Day and Night was born, one of its sides was found much abraded, which, when observed by the parents, led them to exclaim, "How much this child is wounded!" and they called it MANU'A-TELE, *i.e.* GREAT-WOUND.

Of course, much confusion attaches to the origin and meaning of these names ; and, although there are other myths about them, yet the legend-keeper at Manua assured me that the above are the correct ones as handed down from his ancestors.

† La = Ra, Sun ; Masina and Malama, Moon. Scholars will here recognise at once a Semitic origin.

‡ Both the palace and the title were eventually brought down to earth

[1] See these accounts in Dr. Turner's *Samoa a Hundred Years Ago,* &c., pp. 10–15.

Tagaloa the Creator then said to Night and Day, "Let those two youths, the Sun and Moon, follow yourselves. When Day proceeds, let the Sun follow; when Night proceeds, let the Moon follow." These two are the shadow of Tagaloa, and are named, all the world over, "The Reflection" [literally the moon] of Tagaloa."

Tagaloa the Creator then appointed that they should proceed along one side only of the heavens, and that the stars should accompany them. [It is said by the legend-keeper, that the stars all had names, but the present generation has forgotten them.]

We now seem to have a reference to the Deluge.

(a.) *The Emergence of Land.*

Then Tagaloa the Messenger, having assumed the form of the Turi,* went about to visit the lands; but no land could be seen, only the wide expanse of waters.† Commencing at the group or range where the Eastern group now stands (1), he caused that group to emerge from the waters. Then he proceeded to where Fiti [Figi] stands (2), and caused it to emerge. Then, wearied with traversing so wide an expanse of ocean, he stood and looked towards Tagaloa the Creator, in the heavens. Tagaloa the Creator looked down and the Tongan (3) lands emerged. Again he turned towards Samoa [Manu'a is meant]; but, unable to continue his course, he looked again to the heavens. Tagaloa the Creator and Tagaloa the Unchangeable looked down, and the land called Savai'i (4) emerged.

Tagaloa the Messenger then returned to the heavens and reported the existence of those lands. Tagaloa the Creator then went on a black cloud to inspect them.‡ He was much pleased and said, "UA LELEI" *i.e.*, "IT IS GOOD." Then he stood on the tops of the mountains and trod them down so as to prepare them well for the habitation of man.

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and are inherited by the present king of Manua, whose council-house is called "LE FALE'ULA." This is related in another tradition which seems to have reference to the blessings bestowed on Abraham and his posterity.

The priority of Tuimanu'a to all other Samoan chiefs seems fully substantiated by an ancient custom, which is that, when a chief dies, whether of Savai'i or Upolu, to carry about the corpse from place to place, and for persons to cry out during the procession, "*Tuimanu'a e, lo'u alii,*" "O my chief, Tuimanu'a!"

* See note on "Tuli," *ante.*

† We have here, probably references to (1) the Asiatic mountains; (2) the African continent; (3) Syria; (4) Arabia.

‡ Ps. civ. 3. "Who maketh the clouds his chariot: who walketh upon the wings of the wind."

(b.) *The Peopling of the Earth after the Flood.*

He then returned to heaven and said to Tagaloa the Messenger, "Return to your course; take this pair, Group and Eastern, and let them people the eastern range. From these two of the progeny of Tagaloa it is that the whole eastern range is named. He next sent him with Group and Fiti* to people the lands which are named after them. In like manner he sent him with Group and Tonga=תֹּגַרְמָה, by whom the lands known by their names were peopled. All these were the progeny of Tagaloa.

By the command of Tagaloa the Creator, Tagaloa the Messenger now returned to Manu'a to FATU-MA-LE-ELEELE, and of their progeny selected Valu'a and Tiapa, and took them to people the land which is now called Savai'i. To this pair were born a girl, whom they named I'i, and a boy, whom they named Sava; by these the island was peopled, and hence the name Savai'i.†

On his return from Savai'i, Tagaloa the Messenger looked imploringly to the heavens. Tagaloa the Creator looked down, and Upolu emerged from the waters. Again Tagaloa the Messenger looked up imploringly to the heavens. Tagaloa the Creator looked down, and Tutuila emerged.

Returning to the heavens, Tagaloa the Messenger said, "There are two lands now for resting-places." Tagaloa the Creator answered, "Take the man-producing vine, and go and plant it exposed to the sun. Leave it to bring forth spontaneously, and when it has done so inform me." He planted it at the east end of Upolu, at a place called the Forum of the Sun. When he visited it, he found that the vine had produced a shapeless, moving mass. He informed Tagaloa the Creator that the vine had brought forth. Tagaloa the Creator himself then descended, and saw that it was a mass of worms which the vine had produced. He straightened them out so as to develop their heads, faces, hands, and arms, moulding them into perfect human forms, and he gave them heart and soul. Thus were formed four human beings, who were named Upolu and Tele, and Tutu and Ila. The former pair were left on Upolu to people it, hence its name Upolu-tele [Great Upolu, as it is called by the people of Manu'a]. Tutu and Ila were appointed to people Tutuila, hence its name. That vine was the daughter of Tagaloa. It has two names, the Human Vine, and the Sacred Vine.*

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* Fiti = פּוּט, Libya.

† Savai'i. The reference in this name seems to be to Sheba, שְׁבָא, son of Joktan (Gen. x. 28). If we suppose that his wife's name was Yichi, *i.e.*, יְחִי, life, then we have, in the two combined, Savai'i, thus: שְׁבָא and יְחִי=Sava and I'i=Iki; and as Sheba, son of Joktan, was the progenitor of the ancient inhabitants of Southern Arabia, we thus find that Yemen is the Savai'i; and Savaiki, Havai'i and Hawai'i of Polynesia; and hence that, in all probability, Yemen was the starting-point of the light-coloured Polynesian and Malagasy races.

Tagaloa the Creator then gave a parting charge to Upolu-tele and Tutuila that they should not encroach upon Manu'a on pain of destruction, but that each should confine his rule to his own territory.

The tradition is not complete; but, taken with the Solo, it appears that we have, commingled in the two, a remarkable notice of particulars connected with the original creation and the Noachian Deluge.

It is in every way a remarkable and interesting tradition. Its great resemblance, in some particulars, to the Mosaic record; its monotheism so greatly resembling Trinitarianism; its cosmogony; its lofty ideas and poetic character,—all point to the conclusion that those who have handed it down, from father to son, from time immemorial, as an inviolable trust, must be closely allied to the original possessors of the Mosaic record. That the Samoans are so allied I have no doubt; hundreds of pages, of equal interest with those above, with which I have been intrusted, the habits and language of the people, all convince me that such is the case. I shall rejoice if time and opportunity be afforded me to present these things for the consideration of the thoughtful and the scientific.

We now give the solo: on one side the original; on the other side, the translation. The figures will show the lines of the one which correspond to those of the other: the headings of the several parts as given in the translation, are not in the original,—they only represent my own idea of the references or meaning.

In reciting these poems the old men always make the last lines rhyme with each other in quantity wherever the vowels are similar, even though in prose the quantity is dissimilar.†

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* Perhaps this paragraph has reference to Japheth and his descendants, as peculiarly blessed of God. See Gen. ix. 27, and x. 5. And, if so, we have in the above, a reference first to the Aryan race eastward; the Hamitic and Semitic races to the south-west and south-east; and to the Japhetic race to the west and south, but nearer the point of radiation which we assume to be not very far from Ararat.

† This poem, it will be seen, has only 114 lines; I have another of 197.

TRANSLATION OF THE POEM OF CONTENTION.

The Messenger-god, in the form of Turi, flies over the vast expanse of waters.

1. “Rollers flooding; rollers dashing;
2. Rollers fighting; rollers crashing;
3. The current of waves and the succession of waves,
4. Surging high, but breaking not:
5. Waves reclining; waves dispersing;
6. Waves agreeable; waves gentle;
7. Waves affrighted; waves leaping;
8. Waves breaking; waves warring;
9. Waves roaring; waves storming;
10. Waves human; waves marching from East to West,
11. Whose companion* is the wandering current.
12. Turi from the ocean must rest in the heavens;—
13. O Tagaloa, I fain would rest;—
14. These lower waves affright my breast!
15. Where is the land which first up-sprang

O LE SOLO O LE VA.

“*O le upu lea a le Turi* (*o le ata lea o Tagaloa-savali*) *ia Tagaloa-faatutupu-nuu*,” i.e., “*The address of the Turi* (*which is the shadow of Tagaloa the Messenger*) *to Tagaloa the Creator.*”

1. “Galu lolo; ma galu fātioo
2. Galu tau; ma galu fefatia‘i
3. O le auau peau ma le sologā peau
4. Na ona faafua a e le fati.
5. Peau taoto; peau ta‘alolo;
6. Peau mālie; peau lagatonu;
7. Peau ā lili‘a; peau la‘aia;
8. Peau fātia; peau taulia;
9. Peau tautala; peau lagavaa;
10. Peau tagata; peau a Sifo mai Gaga‘e:
11. O lona soā le Auau tataa.
12. E mapu i lagi Turi mai vasa;
13. Tagaloa, fia malōlō,
14. Tă lili‘a i peau a lalō!
15. Fea le nuu na lua‘i tupu,

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* As an aide-de-camp.

16. Where Tagaloa holds the helm? *
17. Great Manu'a first up-sprang!
18. Up-springs Savaii and the Forum Alamisi,
21. The two Samatas, by sea the one, the other in-land
22. This was Tagaloa's seat, 'tis here he made a stand.
19. But [be it known that] these did not arise
20. Till after the Tongan Group, the Fiti Group, and Groups of smaller size.

The Production and the peopling of Upolu and Tutuila.

23. Abide in thy mountain-range;—visit and rest;—
24. Abide, Tagaloa, on Manua's high crest;—
25. But fly [on a visit] to thy Group in the West!
26. To measure and compare the space
Which lies between from place to place,
27. Say which is greater which is less
[And thus prepare to show thy grace†]
[For]
28. The ocean's long and boisterous, terrific waves affright,
29. And Tagaloa's giddy at the fearful sight.
30. Oh, for a little coral strand! Thus to heaven he cries:—
31. Upolu, bit of rock, diminutive in size;
32. Tutuila, bit of stone, still smaller [in our eyes],
33. Are lands that thereupon immediately arise:—

16. Tagaloa e taumuli ai?
17. Manu'a Tele na mua'i tupu.
18. Tupu Savai'i; a e muli ma malae Alamisi,
19. I le Atu-Tonga, ma le Atu-Fiti,
20. Atoa le Atunuu e iti.
21. Samata-i-uta, Samata-i-tai
22. Le nofoa a Tagaloa ma lona ta'atuga.
23. Tumau i lou atumauga; ta'alolo;
24. Tumau, Tagaloa, i mauga o Manu'a,
25. A e lele i lou Atu-Luluga;
26. E fuafua ma faatatau
27. Le va i nuu po ua tutusa.
28. E levaleva le vasa ma savili,
29. E lili'a Tagaloa i peau ălili.
30. Tagi i lagī sina 'ili'ili:
31. Upolu sina fatu laitiiti;
32. Tutuila sina maa lagisigisi,
33. Nuu faaō e a sisii.

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* See Psalm xxix. 10, "The Lord sitteth upon the flood.

† This is strongly implied.

34. Where chiefs may come and find a place of rest,
35. And Tagaloa, with sole control, enjoy a feast.*
36. Hither came from heaven the human vine
37. Which gave to Tutuila and Upolu their ancestral line,
38, 39. Where Atua,† Aana, and Le-Tuamasaga all combine.
40. The bodies only moved, they did not breathe,—
41. No heart's pulsation did they give.
42. Tagaloa is informed [in heaven] above:—
43. 'The sacred vine now shows the fruits of love;
44. But its offspring only wriggle in the sun;
45. Of legs; of arms they 've none;
46. No head or mouth is shown;
47. Of heart's pulsations there 's not one!'
48. Tagaloa then, descending to the West,
49. By speech, defined and set the case at rest:—
50. 'These fruits, the product of the vine, are worms,
51. Which I now straighten into human forms.
52. Unto you each I now impart a will;
53. Opacity must be your bodies' portion still;
54. Your faces, they must shine [I so ordain],
55. That they may Tagaloa entertain,
56. When he descends to walk this earth again.'

34. E mapusaga i ai alii,
35. Tagaloa e 'ai faafe'i'i.
36. Na faaifo ai le fuetagata,
37. Na faatagataina ai Tutuila,
38. Ma Upolu ma Atua ma Aana,
39. Atoa ma le Tuamasaga.
40. Na ona gaoi fua e le aala,
41. E leai ni fatumānava.
42. Logologo Tagaloa i lugā,
43. 'Ua isi tama a le Fuesā;
44. Na ona gaoi i le lā,
45. E le vaea, e le limā;
46. E le ulua, e le fofogā;
47. E leai ni fatumanavā.'
48. Ifoifo Tagaloa i Sisifo,
49. I fetalaiga tuu titino.
50. 'Fua o le Fue ni nai ilo.
51. E totosi a'u faasinosino;
52. Outou loto ua momoli ifo.
53. Ia pouli ōutou tino,
54. Ia malama ōutou mata,
55. E tali a'i Tagaloa,
56. Pea maui ifo e savalivali.'

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* To take all to himself? Meaning doubtful.

† These three are the names of the principal political divisions of Upolu.

The Priority of Manu‘a Re-asserted.

57. O Great Fiti, with thy Eastern Groups,
58. Though the mountains be as scattered troops,
Yet each and all to Great Manu‘a looks;
59. Fiti, Tonga, the slippery Rock;
60, 61. The spreading Tacca which raised again the fallen heaven up;
62. Savaii,—leafy like the ămórphŏphâlus,—
63. In vain distinguished by its great and lofty range;—
Hold not aloof!—
64. All look to the rock immovable at Manu‘a, as to that which gave them birth;—
65. To [their mother] the Rock; and to [their father] the Earth!

The First King.

66. Let none the truth gainsay, in unbelief,
67. Alele was the name of first known chief,*—
68. The son of Tagaloa, who only made
A show of justice, which he prostrate laid.

A Description of Manu‘a.

69. The Rock produced her offspring, when numbered at the feasts
70. The muster-roll would show [at least] ten hundred guests.

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57. Fiti-Tele ma lou Atu-Sasae
58. E taape mauga a e aau faatasi Manua-Tele .
59. O Fiti, O Tonga, O le Papa sese‘e,
60. Ma le Masoā felefele ;
61. Na pa‘u le lagi toe tete‘e ;
62. Savai‘i e lalau faateve ;
63. E mamalu fua mauga ina tetele, a e le ‘au ese
64. E auga ia Fatu-le-gae‘e i Manu‘a ;
65. Ia le Fatu ma le Eleele.

66. Ne‘i ai se tăese,
67. O le lua‘i ali‘i o Alele,
68. O le alo o Tagaloa na tā faase‘e.

69. Fanau le Papa e faitau i nunu,
70. Fua selau e fua sefulu.

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* Here probably we have a reference to Nimrod.

71. Where is that land which first up-sprang?
72. Great Manu‘a first up-sprang :—
73. The eastern point of Saua at Manu’a Tele * is thy eastern bound;
74. At Ofu † and at Tufue‘e ‡ are thy western limits found.

The Descent from the Ark, probably.

75. Descending, descending, first of all they came
To the Forum of Confusion [well chosen name!]
76. The Forum of Tranquillity’s the place
Where they enjoyed a calm and time of peace.

Tagaloa’s Council.

77. Here Tagaloa’s Council was convened;
[And thus he spake], a solemn silence reigned :—
78. ‘At all his [my ?] meetings, be the first attention paid
To those who sacred workmen have been made,
79. And perfect be the ship whose keel is laid!
80. Is this the food for those who now are met, on which to feast?
81. To heaven’s disposal leave all fish besides, from greatest unto least;
82. But sacred offering unto Tagaloa made,
Must be bonita would you have his smile and aid.
83. Let Losi § ply his craft the wide sea o’er,
84. And offer unto heaven the choicest of his store.
85. And ye of Tagaloa race, when ye desire to meet,

71. O fea le nuu na lua‘i tupu?
72. O Manu‘a Tele na lua‘i tupu.
73. E te matāfanua i le mată Saua i Manu‘a Tele;
74. Ae mulifanua i Ofu ma Tufue‘e.

75. Ifoifo i Malae a Vevesi;
76. Lepalepa i Malae a Toto‘a;
77. Na sao ai le alofi a Tagaloa, a e lomaloma.
78. ‘Ava mua Tufuga i lona alofi,
79. Ae olă atu le vaa lalago.

80. Po o fono ia o le alofi?
81. Toe i-le lagi i‘a atoa
82. A e atu le ola a Tagaloa
83. Fagotalia le tai e Losi
84. E tau i le lagi ona tā̆fo‘e.

85. Sa Tagaloa i tou aofia ane

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* The most easterly point of Ta‘ū. [See note, p. 147.]
† The most westerly island of the Manu‘a group.
‡ The most westerly point of Ta‘ū.
§ Noah (?)

86. May make the forum in the heavens your noble council's seat.
87. Or forum of the rock, or forum where confusion reigned;
88. The peaceful forum which Tranquillity is named;
89. The forum which was visited,* and forum, too, of gathering clans:
90. Are for your choice, at which to meet, consult, and form your plans.
91. At Forum of Tranquillity your councils you must hold,
92. When ye to build, or ship or house, your counsels would unfold.
93. But whether ship or house be first, [know this as my decree],
94. In heaven will Tagaloa dwell, and there the work o'ersee
95. Of sacred workmen who come down with dignity from me.'
96. Pray who was first a work so honoured to begin?
97. The first to own a ship was great Manu‘a's king.

The Building of the Tower of Babel probably.

98. The errand this which brought the workmen down,
99. A clan of workmen as ten thousand known,
100. With architect-in-chief but one alone.
101. The rafter-breaking god came down,
[With wrath inflamed and angry frown].
102. Alas! my building all complete
Is scattered in confusion great! †

86. Tou fono i le malae i lagi,
86. I Malae-Papa ma Malae a Vevesi
87. Ma Malae a Toto‘a,
88. I Malae asia my Malae-Tafuna‘i
90. I logologo ma pule faatasi;
91. Malae a Toto‘a tou fono ai
92. I si oa mōu inā a‘e.

93. Pe mua vaa pe mua fale,
94. Alaala Tagaloa ma lona ao tapuai;
95. Ae ifo Tufuga ma ona ao tauave.'
96. O ai ea na luai oa?
97. Na luai vaa Tuimanu‘a.

98. Na faaifo ai le fale-tufuga;
99. O le fale-tufuga e toamano,
100. Ae toatasi le Fatamanu.
101. Faaifo le atua gau-aso
102. Sātia si o‘u tă fale ua ato!

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* A reference perhaps to ll. 18, 21, and 22.

† Tradition states that the architects from heaven built a splendid house for the king of Manu‘a without first consulting Tagaloa. This was a violation of the injunction referred to ll. 91, 92. Tagaloa therefore descended in great anger, destroyed the building and scattered the workmen.

A Résumé.

103 The rock his longed-for waves shall know:
104 The moon, desired [with light doth glow].
105 The sun, like statue changeless found,
[Darts his refulgent beams around].
106 The waters in their place appear;
The sea too occupies its sphere;
107 The heaven ascends [the sky is clear].
108 To visit the scene Tagaloa descends;
109 To the West to the East his long flight he bends,
With longing desire to heaven he cries,
110. And weeps for some standing-place for him to rise.
111. Savaii, with its mountain range, sprang up;
112. And up sprang Fiti, and the Tongan Group:—
113. Manu'a was the first created land,
114. And subsequent to her all others stand! Hurrah!"

Taking this piece as a whole, it is difficult to resist the conclusion that we have in it a distinct reference to the Noachian deluge as well as to the original creation. *The Turi;* the descent at the Forum of Confusion; the evident reference, in lines 101 and 102, to the Tower of Babel; and other apparent allusions, suggest to the mind the very counterpart of the history as given by Moses.

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103. Se papa, le tai lē ā oo atu,
104. Ma le Masina e solo mana'o.
105. O le La se tupua le fano.
106. E tupu le vai, tupu le tai,
107. E tupu le lagi.
108. Ifo Tagaloa e asiasi,
109. Tagi i Sisifō, tagi i Sasae,
110. Na tutulu i le fia tula'i:—
111. Tupu-Savaii ma Mauga loa,
112. Tupu Fiti ma le Atu Tonga atoa;—
113. O Manu'a na lua'i gafoa,
114. Ae muli le Atunuu atoa! O!"

NOTE.—I may further remark that, in listening to Mr. Boscawen's paper on the Abramic migration, I was struck with the parallelism in his paper and some parts of mine; for instance, between the first eighteen lines of the third page of his paper, and the 23rd, 75th, and 76th lines of the foregoing poem.

I was also forcibly reminded of another tradition of the Samoans which, I believe, embodies, in a very mythic form, Mr. Boscawen's subject—viz., the migration of the family of Abram. The pith of it is this : That a family of five fled, in a *south-westerly* direction, from a region called Atafu, where human sacrifices were offered to Ra, the sun. They fled for fear of being offered in sacrifice, although one of the family, a female named Ui, had obtained a promise from Ra that these sacrifices should cease, and by him had become *enceinte*. Her child, half man, half god, became the individual whom I recognise as Abram, and whose mythic history is very long. Here we have, then, apparently independent of each other, three streams of reference concerning the Creation, the Deluge, and the Migration of Abraham —viz., the Bible record, the Assyrian inscriptions, and the Samoan traditions. Let those who think that these have no basis in true history, prove their point, if they can. Our opinion is, that the collateral traditions confirm the truth of the Bible history.

The Chairman (Rev. R. Thornton, D.D., V.P.).—It is now my pleasing duty to return the thanks of the meeting to the Rev. Mr. Powell for the very interesting paper he has put before us on a subject quite new, and consequently, one of fresh interest to us. We shall now be very glad to hear remarks from any one who has aught to say upon the subject, and I would suggest that I think a very fair opportunity is afforded us for interrogating Mr. Powell, who, having lived for forty years in Samoa, necessarily possesses a large amount of information in regard to the group of islands bearing that name, and will, therefore, be able to give us every information upon the subject.*

G. A. Shaw, Esq., F.Z.S.—I did not come here this evening either to interrogate Mr. Powell, or to offer any further information than he has given with regard to the islands of Samoa. I was only there for a short time, at any rate, for so short a time that I do not regard myself as a competent authority to speak on a subject so special as that which Mr. Powell has brought before us, which would naturally require considerable knowledge, not only of the manners and customs of the Samoans, but of their language also. As I was only in Samoa some eighteen months or so, the pleasure of inquiring into the ancient traditions and folk-lore of the natives was not granted to me. When, however, reference is made to

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* Three letters were received in regard to Mr. Powell's paper, the first commenting on the interest attaching to written records of those Samoan traditions which have now all but died out ; the second expressing hesitation in agreeing with a portion of Mr. Powell's arguments ; the third was as follows :—" Tangaloa seems to me to be possibly derived from the Arabic تعالة (Tangalā, if ain ع *must* be transliterated by ng). تعلة is the Arabic for עליון of Genesis xiv. 'The Most High God.' Also in Daniel, &c., and is to this day, in Palestine, the common appellation for 'God.'"

Madagascar, I may say that I feel more at home, as I am better acquainted with Malagasy questions. I am bound to say that certain references that have been made, not only to the Samoans but also to the Malagasy as coming from Yemen, I consider very open to some question. I think it scarcely fair that we should take isolated words in one language and compare them with isolated words in another, especially if they happen to be the names or portions of names of places in another country, and conclude that therefore the original name of the place spoken of in Samoa had its home in Arabia or Syria or some other country. It is true that traditions and myths are found distributed all over the world in the most remarkable manner, but I do not think it is right to take those various myths and traditions and found upon them statements as to the origin of a people or a language. For instance, that tradition to which we have been listening with so much pleasure, and especially the latter part of it, which has been rendered by Mr. Powell into such admirable poetry, does, as I suppose we can all of us see, carry out to a very remarkable degree the written Word as we have it in God's Book. The same remark is applicable to various traditions in Madagascar, although there, unfortunately, we have never had any family similar to that mentioned by Mr. Powell as residing in Manu'a, which have kept up for a long series of generations those traditions either in verse or otherwise. Hence we have not in Madagascar, as far as my knowledge goes, any connected myth or tradition which can be written in the way in which Mr. Powell has put the Samoan legend before us, or that can be said to bear, in any sense of the term, a resemblance to anything in the Book of Genesis. Nevertheless, there was in Madagascar, and has been handed down to the date of the introduction of Christianity, a very clear and distinct idea both of Creation and of a Creator; but the various particulars that have been mentioned as to the Samoan tradition cannot be cited in regard to any tradition I have come across in Madagascar; that is to say, that before the introduction of Christianity they had a clear idea of God, whom they called *Andriamànitra*, which literally translated is *Andriana*, or Chief of Heaven; or the latter part of the word may be supposed to indicate the word Lànitra, or Heaven. It can also be translated, and many imagine that this is the better translation, as "The Sweet Smelling Prince, or Chief," which shows how clearly the Malagasy entertained the idea that the true God above them was not looked upon in any sense as a Being exciting fear or terror, but rather as one who arouses the idea of love. They had also no fear of the Creator, and in many parts of Madagascar I have found the people joining the two names together, and speak of the Supreme Being as Andriamànitr'Andriananahàry, that is to say, "The Sweet Smelling Prince who was the Creator." But there are also in their mythology some customs which, if we looked on them with an eye to eliciting their origin, might certainly lead to a supposition similar to that which Mr. Powell has placed before us this evening. For instance, a few years ago here in England, there was considerable discussion as to the whereabouts of the lost Ten Tribes, and at that time the question was much argued by a society in this country calling themselves the Anglo-Israelites. It so happened that an account of that discussion came to Madagascar, and was read by a few of the chiefs who could understand English. They at once said, very much to our astonishment, that they were the lost Ten Tribes. Very soon after the advent of this report, some of the nobles of the country came to me and said—"We see that in England the English people are saying they are descended from the Israelites—that they are the lost Ten Tribes. Do you not consider that we are the lost Ten Tribes, because we have this custom, which you are perfectly well acquainted with?" It was one that I knew and had noticed many a time, namely, at the New Year—that is to say, at the Malagasy New Year, which does not correspond with ours, as they reckon the year by the lunar months, in consequence of which the New Year is constantly moving—at the feast of the New Year they had always, from time immemorial, kept up the custom of taking to the Queen, or the Sovereign, a bullock which had been fattened and prepared purposely. The animal must have been a bullock without spot or blemish, and of one colour only, as a single hair of another colour rendered it altogether useless for the purpose intended. Its horns must have been symmetrical, that is to say each must have sloped out from the head in precisely the same way. This bullock was taken to the Sovereign as an offering from the people; and not only did the Malagasy always speak of the Supreme Being as Andriamanitra, but it had always been their custom that when anything supremely great or good was marked by a clearly distinctive characteristic, it was always called Andriamanitra; and although the people are aware that this was only used in a figurative sense, it helps us to understand the custom, one illustration of which is that the Queen was also called Andriamanitra, inasmuch as she was the supremely great personage of the realm. The bullock taken to the Queen as an offering was killed by one of the priests, who was thoroughly examined, and if he had any spot, or scratch, or mark, or sore, he was disqualified. He was dressed in a clean white lamba, and after the bullock was killed, its blood was sprinkled by a wisp of grass on the lintels, or door-posts, of the houses. I give this as an illustration of the point I am endeavouring to establish, that these traditions cannot be taken as any indication of the origin of the people. We know very well in Madagascar where all these traditions, or rather those things which have grown from traditions into proverbs, have come from. The Arabs have from time immemorial been a maritime people, and it is well known, not from written history but by the traditional history which has been handed down among the people, that the Arabs came to Madagascar some centuries ago; and there is not the least doubt that from the traders who sailed from Arabia to Madagascar came these traditions and proverbs, and that from them also came the names of the Malagasy months, all of which are Arabic, and likewise most of the days of the week. This is the only point I have to notice in connexion with Mr. Powell's paper, and I have thrown out the remarks I have offered, not because I feel myself qualified to disprove that which Mr. Powell is anxious to make clear, namely, that the Samoans and the Malagasy have come from Arabia, but rather to show that there is not necessarily a proof of common origin, even though isolated words may in some instances correspond with those that belong to Arabia.

Mr. D. **Howard**, V.P.C.S.—I am sure we shall all join in thanking Mr. Powell for having brought this interesting subject before us. It is undoubtedly only recently that folk-lore has been regarded as a subject worthy of any one's attention. I believe it was Grimm, the great grammarian, who first began to think the old nursery tales were worth looking into, that we might see what they really meant; and although in some cases they have been made to mean a great deal more than was originally intended, yet it has been shown that the nursery stories of one's boyhood, and, much more than these, the old mythical tales, half history and half myth, or half religious and half historical, are well worthy of the examination they are receiving. It is very important, wherever it can be done, that these old stories and legends should be taken down in writing in due time; because, when a rude or barbarous people are brought into contact with any form of civilisation, it is wonderful how soon they lose their long-cherished traditions. They do not remember, after a while, what are their ancient legends and what are not; and therefore, where it so happens that any one can commit to writing and thus preserve a record of such traditionary stories as might otherwise be lost, the probability is that they will be found to have very important bearings. I fully feel the remark that has been made about putting the unfortunate languages of the Polynesian islands into the remarkably rugged and intractable form of alphabet, whether it be Egyptian, or Greek, or Etruscan, which we use, and which certainly is such as to prevent the full philological study they might otherwise receive. Of course the greatest pains are taken in these matters, but when we get to seven or eight diacritical marks for one vowel, it is difficult to arrive at any real idea of the philological value of the different words. Here we have undoubtedly a triliteral language which, as far as philology goes, points very strongly to a Semitic origin. We have Semitic traditions—not merely the general traditions we find all over the world—of the Creator and the Flood; and I think it is not too much to assert that not only do we find them everywhere, but that they display the most minute points of connexion with the Jewish nation. We hear a good deal of discussion as to where the inhabitants of the Polynesian Islands came from. Some would have it that they came to those parts of the world when they united to the mainland, and have remained there ever since. If this be so, the geological changes that have taken place must have gone on with remarkable rapidity, assuming them all to have happened since the time of Abraham. In that case we shall have to look to our geology. It is, I think, most important to endeavour to get at every point that does throw a light on the past before we attempt to throw a light on it out of our own inner consciousness. In the present instance we have one of those side lights, which may, if duly followed up, prove of great value. I am sure we are all very grateful to Mr. Powell for the important contribution he has put before us, and I hope he may give us not only this tradition, but many others which he has been enabled to secure, so that they may not be lost. Now is our chance, for probably two or three generations hence, civilisation will have done away with the myths and legends of Samoa, as civilisation is already sweeping away all the quaint and curious bits of folk-lore which are vanishing under the influence of the School Boards in our own country. We cannot in these days sufficiently estimate the enormous tenacity of the human memory, of traditional memory in a less civilised state ; to us the strain is so great that our main idea is to get everything written. Some one has said, " Never remember anything, but rather where to find it." This is the habit of our minds at the present time. Here we are told of a people who have no writings at all, but who simply trust to their memory. I remember an old Parsee servant, who said, " You English spoil your memories by the constant habit of writing," and it is so ; for where people trust to memory, and there is no writing, they acquire a perfectly accurate historical memory which we have hardly a trace of among ourselves. The " oldest inhabitant," when brought into a law court, constantly exhibits a remarkable failure of memory ; but the oldest inhabitant in the savage or uncivilised nations is by no means so liable to make mistakes ; he will generally tell his story with perfect accuracy, and bear cross-examination in a way which some of our English witnesses might envy. The strong and perfect memory is a thing which vanishes under modern civilisation. The inventive faculty is more weak, and the retentive faculty is more strong, among primitive people, and therefore you do not find that rapid change which comes over our own minds in this part of the world under the influence of our nineteenth-century civilisation.

The CHAIRMAN.—I should like, in the first place, to ask Mr. Powell one or two philological questions which I should be glad to have resolved. The name "Tagaloa" is here stated to have been possibly derived from the Arabic. If the word referred to is *ta'alla,* " to be raised " it should be spelt with *'ain.* Might I ask whether there is in Mr. Powell's mind any connexion between the name Tagaloa and tangata, the Maori word for a man ?

The AUTHOR.—None at all.

The CHAIRMAN.—It is merely a coincidence that it begins with " tang " ?

The AUTHOR.—The word " tanga " means " unrestrained," and " loa " continuously, or illimitable.

The CHAIRMAN.—That which cannot be limited or comprehended.—Then I notice that one of the islands is named " Atua." Has that anything to do with the Maori word which means the evil demon which gets into men's insides ?

The AUTHOR.—Not at all. The name of the district is " A-tua," (a long) : that of a god is ătu, āitu, and atua. The meaning is entirely different.*

The CHAIRMAN.—Written in our exceedingly inconvenient alphabet, one can scarcely recognise it. In regard to the question of the possible connexion between the Polynesian and the Malagasy races, I am afraid I cannot as yet quite accept Mr. Powell's theory. It seems clear that the Malagasy race is not a branch of the Negrito.

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* I should like to ask what is the origin of the common Polynesian word Atna (God) ? Is it from the Hebrew or Chaldean אתה ? and equivalent to the expression of being present—or existence ? Was it adopted for the same reason that Jehovah is written יְהוָה ?—T. P.

G. A. SHAW, Esq., F.Z.S.—I think there can be no doubt that the race on the Island of Madagascar are connected with the Polynesians.

The CHAIRMAN.—But not with the Negrito race?

G. A. SHAW, Esq., F.Z.S.—No; the only questions on which philologists are disagreed at present is whether the one country on the western side of the island may not have had an African origin; but as far as the remaining portions of Madagascar are concerned, I have never heard two opinions.

The CHAIRMAN.—The Hovas and the Sakalavas and the others.

G. A. SHAW, Esq., F.Z.S.—The Sakalavas and those I have referred to.

The CHAIRMAN.—Those I am afraid we have always been accustomed to consider as belonging to the Malay race, and I think I should hardly be inclined to regard the Polynesians as having been Caucasians in their origin. I desire now to offer a few remarks on the subject generally. We have, as all present know very well, two theories of man's origin, one being that he commenced existence in a quadrumanous form as a gorilla and then gradually improved, so that from the gorilla he became a savage, and from the savage, first the semi-civilised and then the perfectly civilised man, until he finally merged into the condition denoted by the highest type of civilisation. The other theory is that man was made in the image of God, and was created a civilised being, not necessarily in possession of all the arts and sciences, but civilised, in the sense that he was not a savage: a savage, as was demonstrated in a paper read before the members of this Institute, being, not an aboriginal but a degraded man. This theory which considers the savage to be a degraded man, and the civilised man to be the typical man, holds also that the Creator gave to man at his origin a revelation of Himself. Those who hold this view say that that revelation was not written, but that the first written revelation was committed to a chosen race, whom we know as Hebrews. I will not say as Jews, because the Jews were the people of Judah, and the Ten Tribes were not Jews. To the Hebrews was given a written revelation,—"Unto them were committed," as St. Paul tells us, "the oracles of God." That primeval tradition, some conceive, must have been given to man at his first origin; and it would seem that all men possess it in some form or other, although more or less corrupted; because the tendency of the human mind, in spite of the tenacity and accuracy of the memory, is to add to and comment on that which is committed to it, and, in point of fact, to corrupt. That this theory is the true one, is strongly impressed on my mind; and, when I was reading a work of the sceptic who spoke of it as being one that was held by no sane person, I immediately ascribed his remark to the fact that the theory was correct. I was glad to read that complimentary allusion to the theory I held as being incompatible with sanity, because I was convinced that the person who wrote that paragraph really thought the theory correct. Now, if man did receive a revelation, we should not be surprised to find that all mankind have a tradition of a God and of Creation, and, further, of the dealings of God with man in the case of the Deluge and various other matters. All mankind have this tradition—the Noachian tradition has survived in various forms down to the present day; and this, I think, solves the difficulty which presented itself years ago to the missionaries of the Roman Church, who found, when they got abroad, revealed truths mixed up with a great deal of error, and immediately put it down to the devil, which is the easy way they have, even nowadays, of getting over a difficulty. The fact, however, appears to be quite the other way, for we find all the tribes we come in contact with in possession of certain fragments of the primeval tradition, corrupted and distorted it may be in almost every case, sometimes in one direction and sometimes in another, but all showing some traces of the primeval truth. These myths or traditions, which Mr. Powell has put before us, are exceedingly interesting and valuable, and they are quite consonant with my theory. We have here a tradition of Creation, and of the dealings of God with man, which really looks like a very much paraphrased account of what we have more fully stated in the Book of Genesis. The tradition is for that reason extremely valuable, and we cannot but thank Mr. Powell for having brought it before us. If we could get a collection of all the traditions of the various tribes of mankind on different subjects, side by side, we should be able, by the process of generalisation and by observation of the points on which they tallied or differed, to arrive at something like an account of that tradition which was originally delivered by the Creator to mankind. We thank Mr. Powell for the great pleasure he has afforded us, and I hope he will favour us with a few concluding remarks on what has been said during the discussion on his very able paper.

The AUTHOR.—I should like to ask Mr. Shaw if the Hovas say they have obtained the custom he has described from the Arabs?

G. A. SHAW, Esq., F.Z.S.—As a matter of fact, there is no tradition which states whence they obtained the custom; but they all admit that they have been influenced in their national life and language by their contact with the Arabs. Where the custom originally came from there is, as far as I am aware of, no tradition to show.

The AUTHOR.—There can be no question as to the fact that they have all been greatly influenced by the Arabs; but I should like to know whether they consider that they brought the offering of the bullock with them or obtained it from the Arabs? That is a very important point.

G. A. SHAW, Esq., F.Z.S.—I am sorry to say I have no information upon that subject.

The AUTHOR.—With regard to my paper, I may say that I did not expect the views I have expressed would be endorsed in an initiatory stage like the present, and I should not think of advancing such ideas as I have suggested simply on a single Samoan legend; but I am glad to say I have a pile of these traditions of considerable bulk, and the paper I have read relates only to one of them. These legends seem to me to commence with the Creation and to end with the captivity in Babylon, and the conviction on my mind is that the people who have thus preserved them are of Israelitish origin—that they have come through Babylon. You may trace in their language very important Chaldaic forms, and find them recurring in preference over and over again to the Hebraic form. In these things, and in the habits and customs of the people, we discover so vast an amount of likeness to what we find in the Bible, that we seem to have in reality very like a parallel history to that of the Bible, from Genesis to the Babylonian Captivity. Then, the Maories have in their traditions a representation of an individual which would seem to find a counterpart in Jesus Christ. My idea is that the people I have spoken of are of Israelitish origin; that they were in Babylon, and have been enabled to preserve their history in the form in which we find it. I regard them as a people who have clothed their history in this mystic way, and so handed it carefully down from generation to generation. I asked the man who gave me this tradition, "When did you get it?" and his reply was, "Oh, we cannot tell that; it has been handed down from one generation to another, and that is how we have retained it." The house is always guarded when they relate these legends among their families. If God spare my life, and afford me the opportunity—for the work is only a recreation, as I have my missionary labour to attend to—I am in hopes I shall be able to furnish such an amount of evidence as eventually to establish the position I have suggested. Here is a little book full of Hebrew words in Samoan, and they are put down just as I have come across them. There are many of these similarities, and when we find that they are so numerous, and that if we used the Hebrew instead of the Roman character we should see at once that the language is triliteral, I think I have said enough to give some probability to my view until the opportunity is given me of submitting further evidence to philologists and scientists. I simply put the proposition forward in this hypothetical way, considering, as I do, that these myths which I have procured are of the greatest value to science, and especially to the objects of this Institute. I am much obliged to the Council for having given me the opportunity of presenting this paper.

The CHAIRMAN.—Is it found that the language varies at all? Are these myths preserved in an antiquated language?

The AUTHOR.—Most of them are, and I know many words in them that some of the present generation do not know.

The CHAIRMAN.—But is the language of this myth a very antiquated one, or is it intelligible to the people?

The AUTHOR.—I think it would be understood by the people. There are a few recondite words, the exact meanings of which are difficult to determine, and which are not known to the present generation.

The CHAIRMAN.—Do they not change their diction from time to time? Because we find that unwritten languages show a great tendency to change.

The AUTHOR.—But this has not. Some specimens were given to me that have been handed down unchanged and inviolable from time immemorial.

The CHAIRMAN.—But if this be the language of, say two hundred years ago, the people of the present day would be hardly able to understand it. Take the case of Chaucer, who lived some five hundred years ago. How many people could understand the language then employed? For instance take the following passage:

> "Whanne that April with his showris fote,
> The frost of March hath perced to the rote," &c.

A good many people to whom I have recited this have not known that I was speaking English. Therefore, I ask whether, if this myth be in the Samoan tongue of two hundred years ago, it is intelligible to the people?

The AUTHOR.—The Hebrew has continued, but that is a written language. The Samoan is, however, preserved with great care. Your point is, does the present generation understand it?

The CHAIRMAN.—Yes. It seems very curious if this Samoan is five hundred years old that the Samoans understand it now. This, it appears to me, is a singular phenomenon; if the English of five hundred years ago is scarcely intelligible except to those who have studied it, the fact that the Samoan of five hundred years ago is now understood is very remarkable. Chaucer died in 1400, and what I have recited from the preface to the *Canterbury Tales* was written about 1387.

The AUTHOR.—I have made a note of these suggestions, because I think they afford food for reflection, and I am happy to hear any suggestions others may be inclined to throw out.

The CHAIRMAN.—It would be worthy of inquiry whether the language used here is the old Samoan, or whether the language has been changed or gradually modified by some authority, so as to render it intelligible to the people at the present time.

The AUTHOR.—The old Samoan word for Creation is foafoaga; but the missionaries have chosen the word faia, and the original word has become obsolete. The missionaries very often pitched on one of two synonymous words, and the other being left unused became lost. The natives would give me anything for these legends, but I had them on the condition that I was not to give them to the natives, though I might publish them in English.

Mr. D. HOWARD.—How far is the Arabic of the Koran the Arabic of the present day?

The CHAIRMAN.—It is exactly the same at the present day. I never was at Mecca, but I am told that the Arabic of the Koran is still the Arabic of Mecca; although there are elsewhere a great many Arabic dialects.

The meeting was then adjourned.

FURTHER REMARKS BY THE AUTHOR OF THE FOREGOING PAPER.

Dr. THORNTON's remarks, as to whether the present generation of Samoans understand the language of these ancient myths, are too important to be dismissed with the few words uttered in answer to his questions when the paper was read.

1. The greater part of the words of the traditions are known to the present generation; but their *meaning*, as intended in the myths, is only fully known to the older people and to members of the tradition families, *i.e.* the words have remained, but the meaning of many has become obscured.

2. The existence of the tradition-keeping families on all the islands, and in several districts of each island, has doubtless had a similar effect in preserving the language that the Koran has in preserving the Arabic, as explained by the Chairman in answer to Mr. Howard's question.

3. There were also traditionary myths and love-songs which the young men were accustomed to rehearse of an evening at social parties, which would tend to preserve the language. And the tenacity of memory of such a people should be allowed full weight in connection with this subject.

4. Another important consideration in connexion with this subject is, the great difference which exists between the Samoan and the English languages. The Samoan is unmixed with any foreign language; the English of the present day consists to a large extent of Anglicised foreign words which have displaced words in common use in the time of Chaucer.

These, and other considerations which might be mentioned, I beg to suggest, remove all difficulty to accepting these Samoan traditions as very ancient.

DESCRIPTION OF THE SAMOAN ISLANDS.

BY THE AUTHOR OF THE FOREGOING PAPER.*

1. GEOGRAPHY.—SAMOA (*Sa-mo-a*) is the native name of the group of islands, in the South Pacific Ocean, which lies between 13° 30′ and 14° 20′ south latitude, and 169° 24′ and 172° 50′ west longitude. This group is more generally known as the "NAVIGATORS' ISLANDS." Its number of inhabited islands is ten, with a population of about 34,700. It is 265 miles long, and includes an area of 1,650 square miles. All the islands are of volcanic origin, and contain several craters, the largest of which, if we except the harbour of Pangopango, Tutuila, is on Savaii.

The variety and beauty of the appearance of these islands almost baffle description. The effect, upon visitors, of a first sight of them, is enchanting, nor is much of the enchantment lost after a long acquaintance with them.

The first island that comes in sight of voyagers arriving from the eastward is TA'U (*Ta-'oo*), the largest of the three islands that constitute the group which the natives call MANU'A (*Ma-noo-'a*). It is about six miles long, four-and-a-half broad, and sixteen in circumference, and contains one hundred square miles.

About six miles west of TA'U is the island of OLOSENGA (*O-la-say-nga*). This is a very rocky island, three miles long, five hundred yards wide, and about fifteen hundred feet high. It contains twenty-four square miles. It is precipitous on every side, least so on the north-east, most on the north and south-west. On the latter side, about two hundred feet from the shore, rises up a mural precipice twelve hundred feet high. The principal village is situated, in times of peace, on the strip of land in front of this precipice. In times of war, the people live on the mountain.

About two miles and a half off the eastern point of the island a volcanic eruption burst out from the deep ocean in September, 1866. It continued sending up into the air, at each ebullition, quantities of large stones, mud, lime, and sulphur, mingled with fire; and some months after its subsidence, it was found that a cone had formed, but still 90 fathoms below the surface of the sea,—an interesting fact for those who are still seeking an explanation of the formation of coral islands. An uplifting of this mass would bring this cone into the regions of the coral polyps.

OFU (*O-foo*), the smallest of the three islands included in the Manu'an group, is neither so high nor so precipitous as Olosenga. It is separated from the latter by only a narrow, shallow strait, about a fourth of a mile wide. A double-pointed crag off its eastern extremity, together with the precipitous, craggy nature of Olosenga, give to the neighbourhood a remarkably romantic appearance.

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* Revised by the author from a paper written by him for the *L. M. Soc. Chronicle*.

The population of the Manu'an group is about 1,500. Of these about 320 are Church members, and some 200 are candidates, or one-third of the population seeking salvation through the blood of Christ.

AUNUU.—Sixty miles west of Ofu, is the island of TUTUILA (*Too-too-ee-la*). A mile from Tutuila, off its south-east point, is the little island of AUNUU (*Ou-noo'oo*). This island is about five miles in circumference. Population, 200.

TUTUILA (*Too-too-ee-la*), is a most beautiful island. It is seventeen miles long, five wide, and sixty in circumference, and contains two hundred and forty square miles. Its population in 1866 was 3,948. It has a mountain range running along almost its entire length from east to west. From the main ridge spurs branch off north and south. The island appears to have been formed by a number of volcanoes situated in a line extending in a direction from east by north to west by south. As these have thrown up their burning lava and scoria, they have formed one united ridge, and many craters on both its north and south sides, with wide openings towards the sea. The spurs running down from the ridge are the sides of these craters, and near their junction with the main ridge there occur at intervals, along the island, mountains towering far above the ridge and spurs. Thus are formed mountains and ridges, slopes and valleys, and bays of varied forms and sizes, which, covered with the luxuriant vegetation which a moist, tropical atmosphere produces, furnish scenes of surpassing beauty.

UPOLU is situated north-west by west of Tutuila, at a distance of about thirty-six miles. It is about forty miles long, thirteen broad, and one hundred and thirty in circumference. It contains five hundred and sixty square miles, and has a population of about 15,600.

MANONO.—Two miles from the western point of Upolu, and encircled by its reef, is the island of MANONO (*Ma no-no*). It is nearly of triangular shape and less than five miles in circumference. It contains nine square miles. It has a mountain a few hundred feet high, from whose summit can be obtained a splendid view of Upolu and Savaii. It is itself "one entire garden, in looking at which the eye can scarcely tire." It has a population of about 1,000.

This island held a very extensive political supremacy over Upolu till the war in 1847-54, in which she lost that supremacy, and was obliged to take her place on a level with those over whom she had formerly exercised much despotic power.

APOLIMA (*A-po-lee-ma*) is about two miles from Manono. It is a crater somewhat resembling a horse-shoe, while its depth may well suggest the idea of the hand with the fingers contracted, which is the meaning of the name. That is, according to the conjecture of some, but native tradition gives a different origin of the name. Its highest part is four hundred and seventy-two feet above the sea. The population is about 200.

SAVAII (*Sa-vy-'ee*).—This island is the largest of the group. Its most eastern point is about ten miles from the western point of Upolu. It is about forty-eight miles long, twenty-two broad, and one hundred and fifty in circumference. It contains seven hundred square miles. It has a high mountain-chain running along its length, the highest point of which is more than 6,000 feet above the sea-level. This is the edge of a large crater. The volcanoes which formed this island seem not to have been extinct so long as those which formed the other islands of the group.

2. THE PEOPLE.—The *people* are physically a very fine race, and possess good mental capabilities. Their fine personal appearance has been the subject of remark of almost all intelligent visitors. Their colour is light olive. The following sketch of them, by a keen observer, is a truthful portrait:—"A remarkably tall, fine-looking set, with intelligent and pleasing countenances, and a frank and open expression. The average height of the men is five feet ten inches. Their features are not in general prominent, but are well marked and distinct. The nose is short and wide at the base; the mouth large, and well filled with white and strong teeth, with full and well-turned lips; the eyes black, and often large and bright; the forehead narrow and high; the cheek-bones prominent. Of beard they have little, but their hair is strong, straight, and black."

3. THEIR ORIGIN.—What branch of the great Asiatic family they represent has not been determined. Some of their customs are of a decidedly Jewish character. It seems pretty certain, however, that they are from some part of Malaysia, and that they are the descendants of the progenitors of the present race of all the light-coloured Polynesians. Their designation—SAMOA—is derived from the patriarchal chief who headed the first party that peopled the islands. His name was MOA (*Mo-a*), the family name of the present king of Manua. SA is a particle, which, prefixed to a proper name, means "THE FAMILY OF." SAMOA, therefore, means "THE FAMILY OF MOA"; and it is stated that the name ought to be extended to all the surrounding islanders, for that they are all the family of MOA.

INTERMEDIATE MEETING, March 15, 1886.

D. Howard, Esq., V.P.C.S., in the Chair.

The Minutes of the last Meeting were read and confirmed, and the following Elections were announced :—

Members :—G. J. Lee, Esq., F. R. Met. Soc., S. Africa.

Associate :—Mrs. H. M. Evans, London.

A lecture on "The Negro and the Negritto Races; their Places in the World's History" by the Rev. F. A. Allen, M.A., was then read by Mr. H. Cadman Jones, the author being unavoidably absent.

A discussion took place in which the following took part :—The Rev. S. J. Whitmee, F.L.S. (communication); Rev. T. Powell, F.L.S.; Rev. W. R. Blachett, M.A.; Rev. R. Collins, M.A.; G. A. Shaw, Esq. F.Z.S.; R. J. Hammond, Esq.; Captain F. Petrie, and the Chairman.

The meeting was then adjourned.

ORDINARY MEETING, FEBRUARY 1, 1886.

THE RIGHT. HON. A. S. AYRTON IN THE CHAIR.

The Minutes of the last Meeting were read and confirmed, and the following paper was read by the author :—

THE FUNDAMENTAL ASSUMPTIONS OF AGNOSTICISM EXAMINED IN THE COURT OF PURE REASON. By the Rev. H. J. CLARKE.*

KNOWLEDGE is the perception of *relations.* An experience, it is true, may be conceived as a sensation, considered simply and purely as such; but to regard it as amounting to knowledge is to assume that the subject of it recognises, to say the least, in an act of consciousness, that the sensation is his own,—namely, perceives it relatively to himself. In the case supposed he has a kind of knowledge which is as direct and immediate as it is possible to conceive; but, evidently, it is not strictly speaking *absolute.* What he *knows* in respect to the sensation never transcends relations between it and other things, even though we should assume these to be but indispensable conditions of his consciousness. In giving an account or description of it he can frame no proposition which does more than indicate some out of all the relations which are conceivable, or does less than point in some way to himself. If he says that he finds it agreeable or painful, as the case may be, he merely represents it as having excited personal inclination, or, on the contrary, aversion. If he expresses himself more specifically he does but direct attention to further relations by which, whether regard be had to environment or not, it is still connected with states and conditions of personal experience. The things between which relation is perceived may be themselves relations, and of the most abstract description: they may be those purely intellectual results of comparison in which nothing is taken into account but position, form, magnitude, and number; or they may be hypothetical, or even arbitrarily imagined entities. Yet, in so far as they have inter-relations, a true perception of these constitutes knowledge. The concept embodied in this definition must needs be admitted as a genuine and pertinent outcome of the act of intellectual perception; and my designation of it will, it may be presumed, be accepted, unless some distinct and intelligible concept can be formed which may seem to have a better claim to the term I have adopted. Knowledge, then, conceived as a possession of the human mind, is neither more nor less than an accurate perception of relations; and its reality in any department of speculation or inquiry is evidently independent of its value.

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* Vicar of Great Barr, Author of *The Fundamental Science.*

Now experience, so far as its human subject takes cognizance of his own, is always found to be undergoing change. It is possessed in perception in successive phases, undefinably complex and indicative of measureless scope for intellectual operation, both analytic and synthetic. But expectations excited by a recurrence of the same associations, or, indeed, any symptoms of a tendency to ascribe to it significance and purpose, pre-suppose that the relations noted are assumed to be relations of *condition;* and by the perception of these scientific investigation is rendered possible and its course determined. The earliest differentia which the intellect apprehends, as it emerges from the subjective chaos whence all knowledge must of necessity take its departure, is that which the term Order denotes. By degrees the percipient subject, realising that he has his place in a dynamical system of indefinite extent, in which he contributes to the movements of the whole in the reactions of a personal will of controlled and limited power, acquaints himself, in proportion as he duly exercises his mental faculties, with conditions or laws of sequence and association, thus making progress in the acquisition of more or less useful knowledge.

Up to this point, so far as I am aware, I have not only confined my assertions within the bounds imposed by the Agnostic creed, but I have freely and fairly laid down the principles which constitute what may appear to be *its metaphysical basis.* This I have done to the full extent to which, so far as I can discover, the doctrine seems to find support in metaphysically accurate conceptions. But the principles I have enunciated have a philosophical import which is altogether ignored in the Agnostic application of them, and which I shall now endeavour to render evident.

Let all material of thought be for the moment put out of view but such as can be in some way or other *imagined,* that is to say, mentally represented as having a *sensible* existence; and let it be assumed that the relations perceived are those in which *phenomena* successively appear, these relations being simply laws of association and sequence, and their discovery, therefore, being arrived at in the process of Induction. That the kind of knowledge thus obtained is, and ever will be, indispensable to mortal man,—that it is the knowledge of laws of which not one jot or one tittle can be safely set at nought,—no person who understands what he would be saying would so much as think of denying. Yet no barriers are less respected than the bounds by which this kind of knowledge is circumscribed. In the thoughts that prove mightiest in stirring men's blood and determining the course of human affairs they are boldly overleaped; in ordinary human speech they are utterly ignored. Induction discloses no necessity for assigning to categories essentially distinct the manifestations of extension, tangibility, colour, odour, and taste, on the one hand, and those of sense, consciousness, intellect, sentiment, and will, on the other: so far as it is concerned, the attributes thus diversely grouped may be but various properties of one and the same thing. Induction, in its classifications, knows nothing of *specific subjects* of attributes. The existence of substance being assumed, Induction acquiesces, tacitly allows that there is *something,* but takes no account of it, and never recognises *causes* otherwise than as *conditioning antecedents.* The Inductive method is not, indeed, on these grounds despised; but in vain is any exclusive claim set up on its behalf: the common sense of mankind stubbornly withholds its sanction from all such attempted delimitations of the domain of knowledge, and, in conjunction with the religious sentiment which sees in Agnosticism a fatal concession to the demands of an aggressive Atheism, it refuses to cede an inch of the territory it claimed from the beginning.

If, however, the question be referred to the arbitrament of a truly comprehensive and profound philosophy, what must the decision be? Whether or not it be allowable to assume that the relations in which phenomena successively present themselves to the intellect have their ground in *objectively real successions,* and actually constitute in *an objectively real space* what may be called the links of a chain, one thing is certain, a succession or chain of some kind or other is under contemplation. Will a sound philosophy admit the possibility of its having no first link? Plainly it cannot; it must assume without hesitation that a *succession* can in no wise be conceived except as *finite;* in other words, that the conception of Number, involving as it does that of *repetition,* includes of necessity the conception of *two terms,*—namely, *unity* and *the term which its repetition yields,* a beginning and an end, the latter being a movable limit so long as the repetition is conceived to be in progress, and becoming stationary at the point where it is supposed to cease. The chain, then, it is evident, has a first link, the succession must have had a beginning. The truth thus stated is very obvious; and yet, to perceive it is to make a great discovery, if it flashes upon a mind preoccupied with the notion of a phenomenal world which has been in existence from everlasting; for nothing is more certain than that such a world is impossible. A series of evolutions, developments, or geneses,—let us call them what we will,—a series of progressions, continuous, or alternating with retrogressions, a series of changes of any description whatsoever, could nowhere have had place,—could not have unfolded itself even in conception,—without having at some time or other originated.

But what use will the true philosopher make of this discovery? Enough has been said to render it apparent that he cannot assume as the fundamental cause of a phenomenal universe a diffused and mobile kind of essence whose functions and properties find therein just that expression which is conformable to its own nature,—find it, namely, in an aggregate of countless manifestations. He must needs perceive that the God of Spinoza, with his so-called Infinite Attributes and the so-called Infinite Modes or affections of his substance, is a thing of Time and Space,—is a chain, and therefore, however long, of necessity hangs from something, and is in all directions bounded by limitless room for enlargement. If he should thread his way through the elaborate concatenation of propositions, corollaries, and scholia, in which that acute and original thinker with meritorious patience expounds his philosophy, he will not fail to see that the word *Deus,* as there used, is a sound without meaning, and wholly unfitted to give support to an ethical system. Indeed, this misapplication of a supremely important word is apologetically confessed by modern admirers and disciples of Spinoza, notwithstanding that of course they agree with him in ascribing to the universal system of phenomenal relations, and to the constituent material which it presupposes, considered as such, namely, as the only thing which actually exists, immutability and eternity.

Having, however, reached in thought the first link of the phenomenal chain, will the true philosopher hold himself at liberty to turn back without attempting to proceed further? Will he tranquilly conclude that he has arrived at the *ultima thule* of the human intellect? Assuredly not. Contemplating now the first term of a series in which, on the assumption that any philosophy at all is possible, and in fact that the exercise of the intellect is anything more than a dream, antecedents were severally related to their consequents in the way of *condition*, he will ask, as a matter of course, "What is it by which *this first term* was conditioned?" Need it be said that his reason would resent as an insult any equivocation in answer to this plain question, or any reply which amounted to the assertion, "Possibly nothing"? He has traced up through its meanderings, its varying phenomenal indications, the stream of a persistent force; he has reached the spot where it begins: will he find it possible to doubt that it issues from some *spring?* If he continues to explore, his *imagination* is now of necessity at fault, for it is only the phenomenal which he can picture to his mind; but his reason will insist that a spring there must be.

Yet, if he is to discover the spring, how is he to proceed? It will be observed that the relation indicated by the phrase "conditioning antecedent" was *empirically* determined. Now let it, for the sake of argument, be granted that, so long as an investigation can be pursued empirically, the discovery of mere conditioning antecedents should fully satisfy the philosophical inquirer; it is evident that, supposing him to have arrived at a point where the sort of relation they imply has in the nature of things ceased to be possible,—supposing him, I say, to be now looking into the absolute emptiness of what seems to be pure and simple Time, and finding that in the vista of this retrospect he can discern no beginning,—it will be his business to investigate the pretensions of a different kind of relation, namely, one that here demands recognition, and must apparently be assumed in order to account for that succession in which (whether it be objectively or only subjectively real matters not, so far as the necessity in question is concerned) he perceived the relations of the other kind. This, then, is what the true philosopher will do.

Accordingly, he will find himself compelled to assume the existence of something which bears to all other things, whatsoever they may be, the relation of source or author.

He will, of course, perceive that it must differ essentially from these, and therefore must be such as to admit no succession of states, and, indeed, to forbid even the conception of its divisibility (seeing that divisions are inconceivable apart from arithmetical relations), but must have comprehended potentially, in an absolute unity and simplicity of being, all things in which succession or complexity ever has been or ever will be manifested. This assumption, it seems almost superfluous to remark, cannot be classed with probable hypotheses, even the most firmly established; if admissible at all, it has for its immediate basis fundamental conditions of thought.

In contemplating the kind of essence which must thus be conceived, any attempt to comprehend its mode of existence is of necessity frustrated by the impotence of the mind that makes the attempt; that is to say, by the inaptitude of its originated experiences to be utilised in representing to it the Unoriginated as such. All equivalents for this designation are equally embarrassing; no name can be found which more fitly expresses the relation in which the thing signified stands to the finite intellect than "I am that I am."

But it by no means follows that a scientific recognition of the Being thus named is precluded by inevitable ambiguities in the laws of Mind, by such conflicting interpretations of the facts of consciousness relative to the matter in question as Science can neither tolerate nor put a stop to by the legitimate exercise of its functions. Had it not been for the hopeless confusion which, as it seemed to Kant, must thus arise, if the human intellect's decisions are to be received respecting the origin of things, that eminently conscientious reasoner, as honest as he is subtle, would no doubt, instead of establishing, as the supreme court of appeal, what he calls "the Critique of Pure Reason," have given us a thoroughly comprehensive scheme of philosophy, in which every question radically affecting the highest interests of mortal man would have been duly considered, and, as far as possible, answered. Failing, however, to perceive that such a scheme is compatible with the subjective conditions of human thought, he availed himself of the transcendental conceptions which his imperial intellect was able to muster, chiefly in circumscribing his design, and in imparting to it features of which limitation and negation are the most prominent characteristics, conceding to reason the possession of *à priori* sources of knowledge, but labouring to prove that even with these aids it can never get "beyond the field of possible experience." But what are these "Antinomies" at which he stumbled ? What are these perplexing ambiguities in the laws of thought? The first and most obvious of the criticisms they suggest is this: there seems to be taken for granted the possibility of an infinite series; in other words, it is tacitly allowed that infinitude may be predicated of Number. A predicate that may be legitimately used in reference to any kind of increase to which the full latitude afforded by either Time or Space is supposed to be granted, namely, *interminable*, but commonly known as *infinite*, has been slipped unawares into the place of one which also bears this name, but for which, as will be easily understood, no adequately-descriptive title can be found in human speech; and the irreconcilable contradictions and the chaos of thought thence arising have been assumed to indicate the hopelessness of all endeavours to arrive at a knowledge of origination, elementary substance, causality, and necessary being. The inevitable failure of the most masterly effort that can well be conceived to discover the Non-Numeral by a method which presupposes that it should be expressible in terms of Number, we are thus expected to accept, and, if we demur not to the method, must needs accept, as a sufficient warrant for Agnosticism.

Some suspicion, however, destined to lead to the detection of the lurking fallacy, ought, one might think, to have been excited whenever attention was turned towards that ancient misconception of the scope of arithmetic which resulted in a denial of the reality of Motion. Local motion being change of place, it was assumed that no such change is possible except by successive occupation of the several parts into which the intervening space may be conceivably divided. But conceivable divisibility, being without limit, presupposes a number that is never completed; consequently, the assumption being granted, it might seem that the moment never can arrive when it may be affirmed that motion has taken place. This conclusion, however, rests on the supposition that the counting occupies time. But obviously, for any given space, the time required for the completion of the number obtained by subdivision, is not an increasing but a *constant* quantity, seeing that just in proportion to the number of the parts to be traversed is the minuteness of each part. Thus it will appear that the conception of transition is relinquished in the vain effort to conceive of an infinite number of infinitesimal parts, in each of which rest alone is conceivable. If any person should imagine that he has attained to this conception, his only way of accounting for apparent motion would be to suppose a series of transcendently marvellous changes, in which annihilation alternates with reproduction. The truth is, it was not perceived that repetition, however rapid, is generically distinct from transition, and, indeed, from continuity or extension of any kind, although, in so far as they severally yield magnitudes or values, ratios observable within the limits of one genus may admit of comparison with those of another, and thus furnish material for equations. And so it came to pass that, on the supposition of a race being proposed such as that in which Achilles is fancifully depicted vainly striving to overtake a tortoise, the subtle philosopher, although, we may presume, he would not have been prepared to stake anything upon the success he seemed to promise the slow-paced competitor, was able to satisfy himself that, in the dispute as to what the issue must be, he had at any rate the best of the argument.

Now, no metaphysical incongruity, it is true, forbids the use of arithmetic in the calculation of times, velocities, distances, dimensions, and so forth; but whatever value a unit may represent, its repetition is only accidental, and no arithmetical process can change its nature. It is utterly inconceivable that by repetition a point should produce a line, or a line a surface, or a surface a solid. To look for such transformations of genus would be less reasonable than to expect to see a pile of twelve penny-pieces metamorphosed into that silver coin which is called the shilling. A unit of any conceivable value, if finite, of course admits of hypothetical *multiplication*, but no *involution* affecting it can take place, except that of its *numerical coefficient*. If a represent the number of times a *rectilinear* unit is to be taken, then a to the power of 2 will denote the number of corresponding *square* units required to form a square of which a may be taken to indicate a side. Similarly, a to the power of 3 will signify the number of *cubic* units contained in the cube which may now be imagined as standing upon the square. Thus it will appear that, if we should be called upon to assign a geometrical significance to a to the power of 4, we might say that it suggests a *bar* formed by repeating the constructed cube (now adopted as a *unit*), as many times as there are numerical units in a. The association of arithmetical relations with those of extension is plainly *accidental*. It can only be effected through the medium of a concept which is not logically inherent in that of the latter, namely, the concept of the *unit*, and innumerable are the cases in which the calculations it involves can never attain to more than approximate exactness. I must, therefore, confess myself at a loss to understand why it is that liberty to use higher powers than the third in algebraical expressions should be assumed to indicate the possibility of an indefinite aggregate of unimaginable modes of extension over and above those three dimensions which constitute what is known in this world as Space. That there *are* unimaginable possibilities of existence, I do not say *in* space, but, if I may so express myself, *above* it, and also above Time, is a truth which forces itself upon me, if I persist in asking what it is I have reached in thought when I have traced up all succession to its beginning; but the only pertinent hint I can perceive in the mysteries of Number, is that they are applicable exclusively to the relations of originated existence, and fail to throw any light whatever upon that which is from everlasting.

Turning now our attention once more to the "Antinomies" to which I have alluded, we shall see no reason to wonder, if the attempt to arrive at clear elementary conceptions has involved us in a chaos of contradictions, and if every struggle to get free has only proved to be a deeper plunge into a slough of metaphysical obscurities; nor yet shall we find that we must needs despair of ever being able to extricate ourselves. What, then, is to be done? To allow the possibility of absolute infinitude, whether in a numerator or in a numerical denominator, would be to nullify one of those conceptions which are, in the profoundest sense of the word, fundamental, and is therefore beyond the power of thought. To fancy that it admits of question is, relatively to it, thoughtlessly to acquiesce when Reason, who can tolerate no logical inconsistency, resigns her office and leads an opposition; it is, in fact, to render government in the realm of thought impossible. There is, however, it appears to me, a way of escape from the perplexity, and, so far as I can see, there is but one way. These "Antinomies," it will be observed, assume that the reach of the human mind is so circumscribed by Time and Space that no properties or attributes of real being which transcend the limits they impose admit of intellectual representation in consistent concepts, and afford material available for judgments and conclusions in the exercise of Pure Reason. But this attempt to limit our intellectual horizon ignores, as I have shown, considerations which necessitate the recognition of a Being to whose duration the increments of ever-lengthening time add nothing, and who may not be classed with things determinable by any measure of space. A duration that admits of division, or, which is the same thing, may be represented as the multiple of some part, say a moment, however enormous the product may be, is of necessity finite; for division and multiplication are arithmetical processes. But, if this duration be added to Infinity, what do we get? An algebraical equation will give us $\infty + a = \infty$,—a mode of expression which makes it evident at a glance that, relatively to Infinity, $a=0$. We are compelled, therefore, to recognise the existence of something whose age, if age it may be called, is now precisely what it was millions of millions of years ago, has never yet increased one moment, and never will increase, but will swallow up, so to speak, ages of ages, and still have undergone no change. Thus our intellect, though bound to acknowledge the Eternal, cannot fulfil its obligation without overstepping the limits of its time-conditioned experiences. Again, as every measure which has relation to Space is interminably divisible in thought, we can never arrive at a metaphysically necessary conception of a material atom; and, as the process of resolving the manifold in imagination fails to yield at length a metaphysically determinate representation of the absolutely simple, we must conclude that, in the way of occupying space, the latter can have no existence. But neither the Infinite on the one hand, nor the subject of consciousness on the other, can be conceived as admitting division or resolution into simpler forms of existence. Hence it should be evident that we can have no true cognition of either the one or the other, cannot intellectually represent to ourselves the Author of our Being or take the first step towards self-knowledge, without permitting our intellect a freer exercise than is allowed by those space-conditioned experiences which preclude a recognition of the actual existence of monads. In the investigation of the Transcendental we have to choose one or the other of two alternatives: in the attempt to characterise it we must avail ourselves of concepts, which, being shaped and coloured under the influence of a finite imagination, are, from the standpoint of scientific thought, easily perceived to be defective,—concepts which, it must be granted, suggest rather than accurately describe, but which nevertheless may be regarded as pointing to truth and reality; or, in order to prove that we are justified in declining the attempt, we must introduce into our reasonings the notion of an infinite number, and thus do violence to our understanding in the vain endeavour to unite contradictories in one and the same concept. Is there room for doubt as to the choice we ought to make? I venture to think there is not. I find that I cannot hesitate to accept the testimony which my reason bears to the existence of the Infinite, and I fail to see that irreconcilable metaphysical exigencies embarrass the logical conception of that existence, or of atomic simplicity regarded merely by itself, or of the actual existence of atoms, whether they be atoms relatively to space or not. Why must the human intellect of necessity lose its way in a fog, if it seeks to assure itself that it is not deceived by the consciousness of personality? And why must it expect to be thus requited for its pains, if once it endeavours, although in a spirit of humility and reverence, to distinguish that orb of Essential Light from which alone it can hope for illumination, health, and energy? Contradictions it may meet with, through defect of vision; and it certainly will encounter them, if unawares it confuses relations belonging to different categories of thought. These contradictions, however, are the oppositions, not of science, but of "science falsely so called." They are, in the strict sense of the word, *imaginary*. The charge of being divided against itself Science, truly so called, easily escapes,—not, indeed, by stopping short at predications within the range of sensuous conceptions, but by recognising what they ignore, namely, *relations of superiority* to the conditions alike of Time and of Space, and regarding these conditions as *accidents* from the standpoint of Transcendental Logic.

The philosophy I am criticising being sensuous, I do not see how, in treating of Mind, it can cease to be superficial without becoming confused. What has it to tell us about the immediate product of Mind? How would it have us represent to our intellect *a thought?* In the conscious subject this is an object of empirical intuition. Does it, then, occupy space? Has it a length, a breadth, and a thickness,—a measure that may be expressed in fractions, say, of an inch? There is no one who could help perceiving in a moment that all speculations as to its dimensions would be ludicrous. Yet we cannot affirm that it is *nothing*. It may cause a social earthquake, it may overthrow an empire, it may kindle flames of passion that shall spread far and wide, it may set the world on fire. The energy of gunpowder or of dynamite is insignificant compared with the forces which may thus be let loose through the action of a single mind. Suitable molecular combinations cannot be in themselves the energy of intellect, any more, in fact, than they can constitute the mysterious sympathy which tends to propagate their own vibrations, and to stamp upon such motions specific characteristics, nor can such combinations be the cause by which they are themselves accounted for, the force to which their component atoms yield. Some latent force having originated them, they are but the medium through which it finds further issues into the sphere of manifestation which it has thus created. They are the receptacle of a charge and the condition of the discharge. This mysterious thing can by no possibility have its source in space-determined properties,—that is to say, dimensions, resistance to pressure, capacity for gravitation, for molecular vibrations and combinations, for the expansion and contraction of molecular aggregates. To conceive of it as coming out of these is preposterous: it must belong to a higher sphere of existence, whence, within the limits wherewith they fence it round, it acts upon them.

But this conclusion is far from fully representing the philosophical significance of thought, considered as an object of intuition. Thought may involve, indeed it is hardly separable from, sentiment; hence its energy. In contemplating its possible characteristics, I become aware of something immediately cognisable by the faculty I have for *moral* discrimination. Now, then, I cannot help seeing that the Agnostic philosophy labours under a radical defect in recognising but two kinds of intuition; namely, that in which phenomena are empirically perceived, and that which merely presupposes the forms under which such perception is possible, thus leaving out of view entirely intuitions of *the moral sense.* These intuitions assuredly presuppose for their objects real existence, but essentially distinct from that which may be conceived of as a substratum for phenomenal attributes. No mind can, without some consciousness that the effort is absurd, attempt to represent to itself the subject of moral attributes as something which has a certain cubic capacity, is in imagination divisible, and might be examined with the eye, if only physical conditions permitted the construction and the application of a suitable microscope.

While, however, a subject or substratum of this kind cannot, as an object in thought, find place, except in the way of symbolical representation, by means of any of the concepts which arise from the intuition of space, its attributes are no otherwise perceived than in a *succession of experiences,* and therefore under the conditions of a *temporal* existence. May, then, any of these attributes be conceived as having place in that kind of essence which is *eternal?* The Agnostic, as it seems to me, disposes of this question without due reflection. In the first place, *qualities* must be distinguished from *the subjective conditions which their manifestation presupposes.* The latter, for a temporal being, of course involve limitations inseparable from a temporal mode of existence. In the next place, the former, although manifold, may without impropriety be attributed to an essence which excludes the manifold, provided nothing more is meant than that their names represent the multiform relations of its character to things which it originated and which it sustains.

To prove that its character is moral perfection, and cannot be conceived of as separable from Intellect and Will, is not my object in this paper; I deal chiefly with the arguments of those who deny the advocate of the Eternal Being so much as a *locus standi* in the court of Reason. I could, were I to proceed with my cause, force the Agnostic scientist to admit the relevancy of an investigation of historical facts; for I need only ask him what he knows about evolution, whether as an astronomer, or as a geologist, or as a student of biological phenomena, if he shuts his eyes to the significance of the records and memorials of times gone by. Among philosophers, however, no effectual argument can be sustained, if it may be assumed that the *metaphysical* puzzle remains unsolved. If the denial of the reality of *motion* could rouse public attention, it would simply create amusement; for whatever an eccentric philosopher here or there might say, common sense would, after its rough-and-ready fashion, dispose of his subtleties; and its artless solution of a metaphysical riddle is always accepted by the world at large as conclusive. *Solvitur ambulando.* But when the hinge of the question is the possibility of a scientific recognition of things unseen and unimaginable,—a question which the senses can, without experiencing the slightest shock, consent to leave open for any length of time,—it is only an elect few whose spiritual experiences and observation admit of an effectual application of *this* method of protecting faith against the arguments of an embarrassing logic. The majority are borne along in this direction or in that by the authority of respected names, or are held, it may be, in the unstable equilibrium of an insincere and demoralising suspense. That the metaphysical questions at issue will ever be generally understood is hardly to be expected; and this, it may be presumed, the Agnostic philosophers would readily allow. Not, indeed, on that account should they leave the world to its own beliefs, and forbear to meddle with religious views which they regard as superstitions,—not on that account should they shrink from unsettling filial trust in the Eternal Being, from subverting a faith they cannot share and troubling hopes which they cannot themselves accept as sure and certain. Let them go on teaching what they believe to be the truth. Nevertheless, they have incurred no light responsibility in substituting the term "Unknowable" for "God," and in constructing and propounding a system of doctrine in accordance with the sort of gospel they conceive it their duty to proclaim. They have erected an intellectual temple of imposing aspect, they have consecrated it to Nature, they have invited their fellow-men to stand with them beneath its dome, to do homage to their deity, to obey her laws, and to give ear to her priests. But what if, as many suspect, they went to work with precipitate zeal, with a blinding enthusiasm kindled by the belief that they had made a grand and fruitful discovery, to the benefit of mankind for all ages to come? Then let them speedily bid the worshippers depart, until they have satisfied themselves by fresh examination that their structure nowhere rests on fundamentally incoherent notions, a bed of loose and shifting sand, but is founded upon a rock.

The HON. SECRETARY.—The following letter, from the Rev. W. Arthur, has been received in regard to this paper:—

"I have carefully read Mr. Clarke's paper on Agnosticism, and think it valuable. The point as to a first link (p. 180) is put in a striking form, and so are other good points. Perhaps its usefulness would be increased if the writer made it clearer what he understands the fundamental assumptions of Agnosticism to be. I do not accept his definition of knowledge, nor his terminology in several particulars; but that is nothing. The paper is very thoughtful, the drift right, and some admirable points are made."

The CHAIRMAN (the Right Honourable A. S. AYRTON).—I am sure all present will desire me to express their thanks for the able paper just read. It is now open for the members present to offer remarks thereon. I may say that there is one circumstance I have been greatly struck with on hearing this paper, and that is that the agnostics have not been brought, if I may use the expression, face to face with that other world in which they decline to live: I mean the world of spirit—that spiritual condition which we attribute to God, the Creator of the world and of all things. Whatever difficulties are found in the subjects mentioned in the paper, they nevertheless appear to me to be created by the course of treatment the agnostics have pursued in dealing with the material condition of things throughout the universe. I have always thought that the great principle arrived at by the process of material research is that by which we are enabled to make a very clear line of demarcation between what may be called the material existence of things, and the spirit under which that existence is maintained: that is to say, the power of God in relation to matter, which we assume as a matter of course, although we may understand it as that which cannot be defined by length, or breadth, or thickness, or dimensions of any kind, because it is universal in time and space, as far as we can judge, both in quantity and quality,—or, in other words, in strength and power and wisdom. This, we say, exists wherever we bring our researches to bear; for even to the uttermost lengths to which our researches can be carried, we find ourselves landed, if I may say so, in the presence of the spirit of creation, or, to put it in another way, the power of God. If we take, for example, the atomic view, adverted to in the paper, what do we arrive at? We can only see things that are capable of being appreciated by our senses; but, nevertheless, we are brought by the most irresistible logic into a belief in things which we cannot know by the exercise of our senses, but only by the exercise of our intellectual power. When, however, we come to the use of our intellectual power we find ourselves brought, as I may say, into the region of spirit, or, in other words, the relations of the mind to things visible and perceptible—that is to say, its relations to the perceptible and immaterial atoms of which everything known to exist is wrought according to a well-ordained principle. But this is really by the spiritual power of God, as manifested in the condition of every material thing; and as every material thing, of whatever species or kind, has attributes of its own, which are known by the way in which all things stand in relation to each other in this world, it follows that, if these things, or the atoms of which they are composed, are inappreciable by our senses, then, by the pursuit of science, as the agnostics pursue it, we shall be taken away from the question of the origin of life and matter, which is entirely in the dominion of the spiritual power of God in creation. This argument appears to me to be irresistible. If we could see an atom of matter, and know what it is, we should be able to examine it, as we examine other things in ordinary life, whether an elephant, or the smallest possible insect; but we cannot discover, and do not really know, the constitution of a single atom that is used in the growth, either of the tiniest insect, or the greatest object in organised creation. We know the atom must be there, because we see the thing visibly growing and existing; but how it comes there, and what its particular qualities and properties are, no one can know, because we cannot appreciate it by our senses in any way, and, consequently, are only able to do so by the use of our intellect. Whatever we may have regard to, we find ourselves brought to that state of things, inappreciable by the senses, which, however, is most positively known to exist. The reproduction of life,—the thread of reproduction and continuity of species,—we know to exist; and we also know that, as to its origin, no one has ever been able to discover what it is, nor what are its conditions. Yet we are positive that there must be a beginning of all life, and that that beginning must reside, of course, in the parent species, which, in the same way, must have had its beginning, so that there must be a continuous thread of existence in everything in creation; and yet, that thread itself we can only arrive at by our intellectual knowledge, and by the exercise of the intellectual power which that knowledge bestows. Therefore it is, that, in regard to our knowledge of existent things, our intellect becomes the power by which we are able to connect ourselves and our own existence in creation with our belief in a Supreme Being. So it follows that it is not merely superstition, but intellectual culture, that now brings us into a closer relation with the Supreme Being than people were formerly when relying solely on a belief in the existence of a Supreme Being. But sometimes it is asked, "How are we to believe in revelation? What proof is there of it? Why should we believe that anything exists contrary to the ordinary conditions of human nature?" This seems to present to some minds an insuperable difficulty. The other day a man said to me, "Why should I believe it, and how am I to do so?" I ventured to ask him, "Do you believe in the instinct of the bee, which leads it to live in association with its fellow bees, and to make its social arrangements often much better than human beings are found to do when they are brought together? Pray, how did the bee get the specific instinct which enables him to live in this way? If you believe the bee has the instinct given to it by some power or other, you can also believe that man has had given to him a special revelation, when occasion required it, by the Supreme Power over all; consequently, man has as much right to believe in a specific revelation of his relations to God as you have to believe in the instinct of the bee." If we find that all the things in animated nature have their peculiar instincts, it may be asked if, in addition to his reason, a Supreme Being deems it necessary to give man a practical teacher of his relationship to God, or of the state of things in this world at large, and why he should regard all this as impossible? On the contrary, not only is it not impossible, but it is a matter of the highest possibility; and we are entitled to say that, without presuming to measure His power by our own finite and limited reason, we believe that God, in His great goodness, has, in fitting communications, thought it right to give a special knowledge of things to a particular individual as the messenger of divine truth for the benefit of mankind in general. The whole process of reasoning is perfectly complete, and a man is not to be charged with superstition when that which he is asked to believe is consistent with the whole action of Divine Power over animated nature, as far as we know it, throughout the world. Therefore, when we get into the region of Spirit, we entirely emancipate ourselves from all those little perplexities which agnosticism sets up, and which really, as compared with a higher and greater view, appear to me to be an exceedingly trivial mode of treating the things we perceive and observe. As we all know, our powers of observation are very finite, and diminutive, and deceptive, and we are obliged to say that no man can safely assert that anything he sees and handles really exists exactly as he may think it does, because it has to go through a dozen processes of error—the errors of his own powers of observation and perception. Two persons will, as we know, when looking at the same thing, differ very much as to what they perceive. The intellect of one may be higher than that of another, and the more limited intelligence may think it sees a thing in quite another light to that in which it presents itself to the mind of superior capacity. This shows that we must go back from the perceptive faculty to the intellect, in order to determine what it is that a man really sees with his own eyes, although he may tell us, "I saw the thing, and, therefore, I know that it is so." I say, therefore, that so far from modern science having established anything contrary to a full recognition of that Divine Power over the world, every step that has been taken by modern science has only added proof upon proof of the truth of the opinions out of which modern science was originally evolved. I have said thus much because I did not observe that Mr. Clarke, in the paper he has read, had gone into this matter, which I think is one that it is very necessary to deal with thoroughly in treating of what is called the agnostic fallacy.

Professor O'Dell.—The paper, as far as I have been able to consider it, has, I think, been very carefully written, and is very understandable, as far as the subject is to be understood. The existence of God is not denied by the agnostics, neither do they deny the existence of the mind apart from the body; all they say is that these things are not provable. But there are very few things that are really provable, almost everything being open to doubt; but as far as our reason goes, I think that both the existence of God and of the mind are really provable, and that too, apart from sentiment and even from faith—I mean faith as the agnostics understand it, as a superstitious operation of the mind. Without doubt, the agnostics must have faith, or they could not believe in anything. As to the existence of the mind, of course the mind is a thing we have not seen, and, as the paper says, it cannot be portioned out into parts. But, in the same way, although we see the lightning, we have not seen the electricity which produced it. All we have seen is the effect, or manifestation, of the electricity. We have not seen the wind, but we have seen its effects; and just as certainly as electricity and wind exist, the mind exists also, and we have the same reasonable arguments for the one as we have for the others. I cannot put forward my hand and take up that chair without an effort of my mind. We cannot understand mere matter doing this. What is evidenced in such an act is an intelligent effort for an intelligent purpose. So, also, is it in regard to the existence of God. We all know the arguments tending to prove, as a matter of reason, that the human mind cannot accept the existence of a world without a world maker. But it seems to me that many of the agnostics have ideas of a far more speculative character than the ideas of those who believe in God. We do not require to speculate. Look at the absurdity of many of the theories of the agnostics. Take the Darwinian theory, which, commencing at the very highest class of intelligence, goes down to the lowest, descending to the monkey and the fish, the toads and tadpoles, and having got as far as protoplasm, stretching on to a world or a space without any life at all—

thence from that to star-dust, and from the star-dust to the unknowable. If they would only write one word in place of the unknowable—the word God—we could comprehend everything. It seems to me that if you put the two in comparison—the theory that gives us the existence of a God and the theory which traces everything to the unknowable,—you must admit that there is more real intelligence, logic, and accurate thinking on the part of those who believe with us in the existence of God, than on the part of the agnostic who speaks of the unknowable.

The AUTHOR.—It will have been perceived that I have assumed in this paper that the great German philosopher, Kant, was, to all practical intents and purposes, the scientific founder of agnosticism. His views, in so far as they seemed to give any support to agnosticism, were adopted by Sir Wm. Hamilton, and more fully and clearly and popularly expounded by him. Of course there were also scientific persons who fully believed in the existence of God, and accepted the revelation which has been given to us in the Scriptures. I have thought it necessary to confine myself chiefly in this paper to what I may call the Kantian objection to the scientific recognition of the existence and attributes of the Eternal Being. It seemed to me to be advisable, at any rate, to clear the ground for the various other considerations which present themselves as soon as we have got rid of what may be called the metaphysical perplexity. Now, there is one point on which theists and agnostics are agreed, and it is this—that our intellect can have no immediate perception of real existence, but simply of properties or attributes; yet, in perceiving these properties or attributes, we conceive ourselves at liberty to recognise intellectually and scientifically the existence which they seem to presuppose. No one can have any immediate perception of that mysterious sympathy, or influence, or power, which causes atoms, unless they be hindered, to approach each other. But we do recognise that there is some such sympathy, or influence, or power at work, and we find that we are able to determine the laws under which it works. Theists believe they can in like manner, not only with scientific propriety recognise the existence of the Eternal Being, but also determine, in so far as they believe that a revelation has been made to them, and has been rendered evident to them, by the relations in which human beings stand to one another—determine, I say, His attributes; and just as we are able from the laws of gravity to make certain calculations of the results which will be fulfilled in certain cases, so are we able to make calculations and to predict how the Almighty will operate under certain conditions. But here the agnostics meet us with what they conceive to be an insuperable objection to any intellectual determination of those laws, or recognition of those attributes. They say the Eternal Something, or whatever it is—that which underlies all phenomena—is absolutely inconceivable, for if you attempt to represent it to your mind, and if you endeavour to form anything like an intellectual conception of what it is you are speaking of, or to reason about it, you are unscientific,—you fall into contradictions, and are obliged to use inconsistent concepts. Such being the case, all you can do, with scientific propriety, is to assert that there is something; but you must not venture to say that it has such or such attributes. You may render a sentimental acknowledgment to the Almighty, and, if you like, you may believe in Him, but you are not at liberty to say you know Him, because you cannot represent Him to your finite intellect, in consequence of the contradictions into which you fall if you make the attempt. My object in writing this paper has been to show that that assumption is altogether groundless, and that it has arisen from a misconception, or an overlooking, of certain fundamental conditions of thought. It has been assumed that, for anything we know to the contrary, this phenomenal world may have been in existence from everlasting. Such was the view of Spinoza, and such is the view of all pantheists, while the agnostics tolerate the conception that such existence of the world is possible. Now, my endeavour is to demonstrate that the phenomenal world must have come into existence, that it is something originated, and that its existence presupposes something unoriginated. I have also tried to show that there is no intellectual difficulty in conceiving that Something, nor in representing to our minds that Something as having attributes. Although we conceive of the Almighty as being perfectly simple in His mode of existence, we may, as I have desired to establish, regard all His attributes as mere diversities of the aspect under which His character is presented to our finite intellect. The manifestation of the infinite and the simple to the finite and the manifold, supposes the necessity that there will be on the part of the finite intellect a recognition of the manifold in the attributes. I believe, then, that we have a scientific right to say that the Eternal Being exists, and to recognise those attributes which He has manifested in our conscience. I believe that we are intellectually, as well as morally, under the obligation to recognise the Eternal Being, who is the author and sustainer of ourselves, and of all things by which we are surrounded.

The meeting was then adjourned.

The following additional communications in regard to the paper were received :—

REMARKS BY THE REV. R. COLLINS, M.A.,

late Principal of Cottayam College, Travancore.

Mr. Clarke has tackled a very difficult subject—or rather, perhaps, it would be better to say, the highest mystery of the universe under its most difficult aspect, namely, the aspect disclosed from the standpoint of "pure reason." How far can pure reason indicate an Eternal Being, or Person? The agnostics allow, nay, infer, an Eternal *Something*. It is true that pure reason must find something beyond the last link of consequent and antecedent *empirically* determined. Herbert Spencer, from pure reason, finds that something in the "Infinite and Eternal Energy, from which all things proceed." Kant saw the *noumenon* behind the *phenomenon* as a mode of the "unknowable" something. Spinoza, whether actually from pure reason or not, though professedly so, found that something in what he names "God"—according to his definition, "natura naturans et natura naturata in identitate Deus est." The question is, whether Mr. Clarke's argument necessarily leads us beyond this Eternal *Something*. I do not perceive how the complex conclusions of the first paragraph of page 182 can be reached from "fundamental conditions of thought" without many links of reasoning, which do not appear. What is there in pure reason, so far, to lead us up to a Being (the idea of whom cannot be separated from the attributes of Intellect and Will) rather than the *Something* of the agnostics? It is, however, an important step to show, as Mr. Clarke has done, that the exclusiveness of reasoning in physical science, and even the "Antinomies" of Kant, do not render it unscientific to replace an Infinite and Eternal Energy by an Infinite and Eternal Person. However, it is certain that a true science will always demand an evidence that it cannot subvert. And the only absolute evidence of the personality of the eternal source of all things is in His revelation of Himself. On this subject Mr. Clarke does not touch, as not necessary to the object of his paper. But it has always seemed to me that the historical truth of God's revelation of Himself to man is the only valid weapon against agnosticism. The acceptance of the historical truth of the Bible is made easier by the clearing away of philosophical difficulties, and here Mr. Clarke's paper is of great value. The argument from "*the moral sense*," pp. 188 and 189, is, I think, unanswerable. Is not the most forcible "pure reason" argument for the personality of the "Infinite and Eternal Energy from which all things proceed" the analogy of mind? Whence is the force that moves this pen over the paper? It certainly originates in mind. We know, in our own experience, mind as the only origin of the force which results in motion towards final causes. The movements of matter towards final causes throughout the universe speak of a Supreme Mind. Of course, we are met with the doctrine that mind is, after all, only one of the attributes of matter. And this is claimed, I believe, as the result of "pure reason." Perhaps, however, the "common sense," that the late esteemed Dr. Carpenter spoke so often about, will free us from any doubt on the question; and the results of even "pure reason" must be weighed one against another.

THE AUTHOR'S REPLY.

I HAVE to thank Mr. Collins for giving me occasion to make a few remarks in elucidation of the reasoning which connects the opening sentence in the first paragraph of page 182 in my paper with the conclusion reached at the end of the paragraph. As will easily be perceived, my previous analysis of the conception of number underlies the argument. I assume that the absolutely infinite cannot be conceived as admitting of division. This assumption obviously has for its immediate basis fundamental conditions of thought. For how is a part of the infinite to be represented in thought? It must be either infinite or finite. But it cannot be infinite without equalling the whole, on which supposition no division has taken place; nor can it be finite without being contained in the whole an absolutely infinite number of times, a supposition plainly forbidden by the conception of number. Moreover, the essentially indivisible is unmistakably the essentially *simple*, no argument being needed to render it evident that resolution or decomposition of any kind implies division.

Now, although the conception of an absolutely Infinite Being takes its rise in the failure of all efforts—a failure perceived to be inevitable—to assign in thought a beginning to duration, yet, of course, it matters not whether infinity be considered relatively to time or to space, so far as regards the relations of the infinite in the abstract to fundamental conditions of thought. Here, indeed, the question may occur, "Why must the infinite, or—to use a strictly accurate and unambiguous term—the unconditioned—in respect to time, be assumed to be also infinite or unconditioned relatively to space?" Not being engaged, however, in a controversy which hinges upon this question, I presumed I might be permitted to leave it to be inferred that, as there is no possibility of arriving at a metaphysically determinate conception of the necessary existence of any space-conditioned being, seeing that size and dimensions can have no relation whatever to interminable vacuity, subjection to space can be no condition of that eternal existence which we are compelled by fundamental conditions of thought to recognise as necessary. In fact, no relations pertinent to my reasoning are conceivable but such as may be perceived in the investigation of these fundamental conditions. These, accordingly, and not any superimposed inferences from empirically-prepared data, are what constitute the immediate foundation for my assumption that the manifold owes its being to the simple,—namely, must have issued from it into actual existence, and, therefore, must have previously existed in it potentially from all eternity.

I do not pretend to have thus demonstrated the inconceivableness of origination apart from intellect and will. So far as the object I had in view was concerned, it sufficed for me to show—and this I have endeavoured to show—that, when we proceed to reason about the being and attributes of the first cause; no inevitable "Antinomies," no irreconcileable conclusions arrived at by diverse routes of legitimate argument constrain us to confess that it is unknowable, but that, as regards the possibility of scientific recognition, it is for us, to say the least, as favourably situated as assumed second causes, giving,—as second causes, if assumed, appear to give—evidence of characteristics, and, equally with them, accounting for experiences which, to some extent and under suitable conditions, admit of being foreseen and predicted. Whatever be the cause assumed for any experience, and however near imagination may bring it, no scientific recognition of it, more immediate than is presupposed in warrantable inferences from experienced effects, finds place within the sphere of the human intellect. All evidences of existence hint at more than we are permitted to know, but at the same time they involve the possibility of arriving in respect to it at real knowledge. This is my position. It will be seen that I fully agree with Kant that "all synthetical principles of the understanding are applicable immanently only, *i.e.*, within its own sphere" (*Critique of Pure Reason*, trans. by Max Müller, vol. ii. p. 546), but that I have given reasons for dissenting from his assumption that the human understanding transcends its proper sphere in attempting synthesis in the region of supersensuous experience, and that the only cognizable law of causality is that which links together phenomenal changes. If these reasons are valid, it follows that a philosophical system which forbids the ascription of plan, purpose, or character to the Fundamental Cause, and limits the concept to that of an Infinite Something, is a system of gratuitous negations, rests on no true philosophical basis, and breaks down of its own weight.

ORDINARY MEETING, MARCH 1, 1886.

REV. A. I. MCCAUL, M.A., IN THE CHAIR.

The Minutes of the last Meeting were read and confirmed, and the following Elections were announced:—

MEMBERS:—Professor J. B. de Motté, United States; Rev. C. E. Sherard, Braintree; E. F. Wyman, Esq., London.

Also the presentation of the following works for the Library:—

"Bulletins of the Geological Survey of the United States."	*From the same.*
"Transactions of the Anthropological Society of Washington."	„
"Transactions of the Numismatic Society of Philadelphia."	„
"Report of the Comptroller of the Currency of the United States."	„

The following paper was then read by Mr. H. Cadman Jones, the author being unavoidably absent.

ON MIRACLES: THE FORCE OF TESTIMONY. By the Rev. H. C. M. WATSON, St. John's, Christchurch, New Zealand.

ANALYSIS OF THE ARGUMENT.

IT is objected that testimony cannot prove a miracle: Various definitions of a miracle. Hume's accepted as a fair account of a miraculous occurrence: a violation of the laws of nature.

A. i. Objection. That a miracle is *impossible.*
   Two divisions of this objection:—
      1. That there is no power adequate to its production.
   This postulates on the part of the objector a complete knowledge of the forces of the universe.
      2. That a miracle is inconsistent with Divine attributes—a miracle is an afterthought, and impugns the wisdom or the power of God.
   The attributes of God are known only or mainly through revelation, which also reveals miraculous operations.
   (*a*) Mr. Babbage's reply to this objection complete, but unsatisfactory.
   (*b*) Contrivance the law of created being. Means to an end is contrivance.
   (*c*) A miracle is in relation to God what an act of will is in relation to Man.
   Mill's opinion.

ii. Objection. That a miracle is INCREDIBLE.

Preliminary form of this objection :—

That testimony is reliable only on the assumption that the laws of nature are uniform.

Fallacy of this objection shown. Illustrated by—Mendon says that all Cretans are liars, &c.

1. Hume's first objection :—

That testimony cannot reach to the supernatural.

If the objection only means that testimony cannot reach to the *cause*, it is true.

But testimony can depose to phenomena. That the *cause* of the phenomena is supernatural is an inference which we irresistibly draw.

2. Hume's second objection :—

That the falsehood of testimony is more probable than a miraculous occurrence.

The fallacy pointed out (Whately), and the force of the objection exhibited.

Stated by Paley to be a contest of improbabilities.

Miracles in relation to testimony may be better stated as a case of diverse, but not contradictory, testimony.

The *laws of nature* known by *testimony*.

Miracles known by *testimony*.

Argumentatively, therefore, miracles are shown to fall within the scope of testimony.

B. The difficulty in accepting testimony to miracles arises from our inability to conceive that the laws of nature have ever been unlike what they now are.

It is a fact, however, that they were not always what they now are:

At the beginning of the world (Butler).

At the emergence of man upon the earth, whether by creation or evolution.

Paley's summing up, "If twelve men," &c.

TESTIMONY is a fact whose usual and natural explanation is found in the existence of another fact to which it deposes, and of which it is the appropriate and sufficient proof. It is admitted that testimony cannot prove the existence of facts which are mutually, or self, contradictory. It cannot, for example, prove that two and two make five. That two marbles added to two marbles make five marbles is rightly regarded as impossible; and while our intellectual faculties remain as they are, no testimony, however competent, if such were forthcoming, would induce any person who understood the meaning of the terms, to believe the proposition affirming it. Even if we saw with our own eyes that the addition of two objects to two objects made five of a similar character, we would not believe the evidence of our senses. We should know, either that we had been deceived by some sleight of hand, or that our senses had deceived us. Testimony, therefore, cannot prove that which is admittedly a contradiction in terms. Thus much must be conceded. But short of such a proposition testimony, competent testimony, can prove the occurrence of any phenomenon. It is asserted that a miraculous occurrence cannot be proved by testimony; and that, therefore, testimony in proof of alleged miraculous occurrences is to be waived aside, or that the explanation of the alleged phenomenon is to be sought in the operation of natural causes. With this objection I purpose to deal.

DEFINITION OF A MIRACLE.

A miracle has been variously defined. It has seemed to many writers that by altering the definition of a miracle they get rid of its miraculous character, or, at least, minimise the force of the objections which are urged against it. I cannot see that, whatever definition be accepted, any verbal change can evade the plain objection which lies against the *thing*. If a man tells me that he saw a dead man raised to life, my difficulty lies, not in defining what he tells me, but in believing that the thing to which he deposes really occurred.

Hume's definition of a miracle is that it is a violation of the order of nature; and although exceptions have been taken to this definition, yet it seems to meet the case of every miracle, except the miracle of prevision. The order of nature may be shortly described as a succession of uniformities. Antecedents are followed by consequents in orderly succession, without break, or, when the succession is broken, the break is due to the action of a higher law, whose existence is recognised, and included in our conception of nature. A miracle suspends some natural consequent, or introduces some supernatural antecedent. It is a violation of the order of nature.

While I accept Hume's definition as sufficient, I should prefer to define a miracle as an instance of the suspension of the laws of nature, or the quickening of the operations of nature; or of the suspension and quickening of those operations, by a supernatural agent. When the action of the agent is coincident with, and in attestation of, certain statements or assertions, it is a sign, and is an authentication of the character of the agent. The force that attaches to such coincidences or signs must be determined by a consideration of the nature of the claim itself (that is, its compatibility with other truths), and other important circumstances. But, in any case, a miracle is evidence of the exertion of a superhuman or supernatural power. It therefore implies the existence of a supernatural Being, both able and willing, on certain occasions, to suspend or quicken the operations of nature.

Another definition of a special class of miracles may be given thus :—

A miracle consists in the arrest of the action of the antecedent in nature by the intervention of an antecedent above nature, so that the first antecedent is followed, not by its own orderly consequent, but by another consequent, whose nature is determined by the supernatural power operating, and follows naturally its own supernatural antecedent. Thus, the natural antecedent A is, in the order of nature, followed by its own consequent *a*, but the introduction of B before *a* follows, arrests the action of A, and changes the character of the consequent, so that A is not followed by *a*, but by *b*, which is the consequent of B. The introduction of B may require to be explained; but however explained, its consequent *b* follows naturally. Thus, Lazarus dies (A); the natural consequent of his death is decay (*a*); but Christ (B) intervenes before the action of A is completed, and the consequent is not decay (*a*), but life (*b*). That is, A is followed not by *a*, but by *b*, which is, however, not the consequent of A, but of B.

But these definitions are definitions which imply a theory, and are thus of the nature of an explanation. The theory, or the explanation, may not be true; nevertheless, a miracle may be a fact. If the testimony vouching for it is trustworthy, a miracle is a phenomenon which calls upon scientific observers for explanation; and if scientific observation cannot account for the undoubted phenomenon, by its present conception of the universe, then so much the worse for that conception. It is insufficient, and must be amended; for a comprehensive conception of the universe must be consistent with all the authenticated facts of the universe. If it fail to embrace any one fact, it is not true or not sufficient.

A. OBJECTIONS TO MIRACLES.

To return to the objection. A miracle, it is said, is impossible. Testimony cannot prove a supernatural event; that is, an event which does not stand in any proportionate relation to the natural antecedent. All the various objections to miracles may be reduced to these two principal objections: *a miracle is impossible; a miracle is incredible.*

THE FIRST PRINCIPAL OBJECTION,—THAT A MIRACLE IS IMPOSSIBLE.

The first principal objection, that a miracle is impossible, amounts to this: either there is no power in nature or above nature adequate to its production, or the exercise of such power would involve some inconsistency.

1. *There is no Power adequate to the Production of a Miracle.*

That there is no power adequate to the production of a miracle is equivalent to the denial of the existence of God. A miracle implies the existence of a Power above nature, directed by a personal will. For it is not a fortuitous or chance occurrence (which would not be a miracle, but a monstrosity), but an act answering an intelligent end. To affirm, therefore, that a miracle is impossible because there exists no power adequate to its production, is to affirm that there is no God. Few intelligent persons would now be found willing to make such an assertion in bald terms. The utmost that any person pretending to scientific accuracy would affirm is that His existence has not been proved, or that there are no proofs of His existence and character sufficient to compel the assent of the judgment to the proposition—There exists a Being whom we call God, the Creator of heaven and earth.

This, as I understand it, is the position of Positivism. The existence of God is not denied, but His existence, or that of supernatural beings, it is affirmed, cannot be, or has not been, proved. In other words, true Positivists are Agnostics. But to affirm that the existence of God has not been proved does not preclude evidence offered in proof of a miracle. Such evidence, if competent, may convince even a Positivist that God exists, or that a Power adequate to the performance of a miracle exists. If the reasoning of Nicodemus is valid,—We know that Thou art a teacher come from God, for no man can do the miracles that Thou doest, except God be with him,—it is evident that testimony, which places us in a similar relation to miracles as an eye-witness, can justify the inference that God exists. An argument from miracles is of the nature of the argument from design.

Therefore, the testimony advanced in proof of the occurrence of a miracle must be of some weight, however slight, in the direction of proving the reality of the occurrence. Unless a man's disbelief rests upon a scientific basis, testimony, trustworthy testimony, of the occurrence of a miracle must carry some weight.

2. *That a Miracle is inconsistent with Divine Wisdom and Almighty Power.*

The second branch of the principal objection is that a miracle is impossible, because it is inconsistent with what are presumed to be the attributes of God, viz., His divine wisdom, His almighty power. This form of the objection is quite inconsistent with that which we have already discussed: that assumed that the existence of God could not be a matter of knowledge; this assumes that He exists, and that His attributes, or several of them, are known to us. The objection assumes that His purpose in the government of the universe and His method of achieving that purpose are matters of knowledge; and affirms that they are inconsistent with the existence of miracles. Whatever real knowledge we have of the Divine Being is derived either from inference or from revelation. The latter, for our purpose, may be assumed to dwell in the book called the Bible. The Bible, which thus reveals the existence and attributes of the Divine Being, also tells us that miracles have been wrought. It may, therefore be inferred that their existence presents no inconsistency with the Divine attributes as known to us. I merely note this available reply in passing. I now proceed to deal with the specific form which the objection takes.

A miracle, it is said, is an afterthought, and is of the nature of a contrivance. It implies, therefore, defect of wisdom or power in the author of nature. An all-wise and all-powerful being does not require, like a bad workman, to correct the faults of his work, by constant interference with it. Divine wisdom and infinite power would be displayed in the construction of an organism that would go on of itself in accordance with the laws impressed upon it when it left the Divine hand. To suppose that he needs to "tinker it up," is to make a supposition entirely unworthy of an Infinite Being. Just as it is impossible for God to lie, so it is impossible for God to work a miracle,—morally impossible. His infinite knowledge and wisdom would protect Him from defective conception; His infinite power from imperfect construction. The objection then is that a miracle is of the nature of contrivance, and so is inconsistent with Divine wisdom and power.

It might be sufficient to reply that the popular conception of the Divine Being may not be true. For the perfecting of His handiwork He may be dependent upon the cheerful concurrence of His intelligent creation. Such an answer would be argumentatively sufficient. Mr. Mill has applied it in relation to the existence of evil; and there are, as the late Professor Birks, in his *Difficulties of Belief,* points out, indications, that the popular conception of God's omnipotence is not consistent with the language of the Scriptures.

(a) *Mr. Babbage's Answer.*

But whatever force there is in the objection that a miracle is an afterthought is completely met by the ingenious argument of the late Mr. Babbage, in his Bridgewater treatise. Mr. Babbage supposes the construction of a calculating-machine which shall proceed according to a given law for a certain number of times, and at a given point shall vary the law, so as to produce a number inconsistent with that law; that it shall then return to the original law and continue to produce numbers in accordance with it *ad infinitum.* The method of the calculating-machine is supposed to illustrate the ordinary operations of nature, and the interruption of the ordinary course by the introduction of a miraculous dispensation.

This supposition obviates any force that the objection referred to may contain. The alterations were all included in the organism when it received its character from the Divine Artificer. A miraculous dispensation is thus regarded as a part of the course of nature, just as the fall of an aërolite is a part of the course of nature.

Theoretically the argument is sufficient; but, regarded as an explanation of the fact of miracles, it is highly objectionable. If our Lord's miracles, either of word or act, find an illustration in Mr. Babbage's calculating-machine, then the miracles were not His, but nature's. He merely took advantage of the law originally impressed upon nature; that at a given period, after the lapse of thousands of years, nature would produce, under certain conditions, certain phenomena.

The supposition exalts His knowledge at the expense of His power, and casts some reflection, however slight, upon His moral character. His knowledge of the hidden processes of nature would certainly be evidential of His mission, for no man could know either the thoughts of man or the secrets of nature unless God were with him; yet, though evidential of His mission, the miracles were not His, but nature's, achieved in accordance with a law originally impressed upon her by the Divine Hand.

To the particular form of the objection that a miracle is a contrivance, I should reply:—To object to contrivance is to object to the existence of animated creation; it is to demand that all intelligent creatures shall themselves be equal with God,—the Self-existent and Self-contained.

(b) *Contrivance a necessary Condition of dependent Life.*

The conditions of life are contrivances, nor could dependent life, so far as we know, exist without contrivances. The taking of food is the contrivance by which we maintain our bodily life and strength; speech and writing are contrivances by which we communicate our thoughts. The facts of life are contrivances by which we gain experience and education. Suppose, now, that we were maintained in life without eating, that we held communion with each other without speaking or performing some kindred act; that we obtained our experience of life instinctively; that what we call our habits were impressed upon us without the necessity of our feeling an ache or a pain, or enduring a pang of disappointment and sorrow. Suppose this method to be extended throughout the whole range of our human life; that the clumsy method of " means to an end," or contrivance, were abolished;—nothing but absolute being would remain —being out of all relation; and what that is we have no means of knowing. The only intelligent conception that we can form of life is that expressed by the word "experience,"—bodily experience, mental experience; and experience is gained by change of bodily or mental states, through the use of means qualified to bring about such changes. That is, life is dependent upon contrivance. The use of contrivance, or means to an end, is thus seen to be not inconsistent with our notion of Infinite wisdom and power; for we could form no intelligent idea of human life apart from the use of means,—that is, of contrivance.

But, while I think this reply might be made with great force to the objection supposed, yet the true answer is that a miracle is an instance of God's immediate personal action. A miracle thus conceived is in relation to Him what an act of volition is in relation to man.

(c) *A Miracle an Instance of Divine Volition; analogous to the exercise of Human Volition.*

The world, on the supposition of a creator, is God's handiwork. Its constitution and its order were impressed upon it by Him. It is in relation to Him what a complicated piece of machinery is in relation to its human maker. A miracle is an instance of the exertion of His personal will in relation to the world, analogous to the exertion of man's will in relation to a piece of machinery.

Let us suppose ourselves to be contemplating a piece of machinery in action,—a turning-lathe, a steam mill, a weaving-machine, for example, which is being worked and directed by an agent invisible to us.

The machine, whose wheels are turned by a crank, driven by a piston, and whose speed is increased by a skilful adjustment of the various wheels, and whose force thus regulated is skilfully applied to the making of elaborate and costly vessels or fabrics, elicits our admiration, as well by its manifestation of power as by its evidence of skill. We contemplate with wonder its power, its methods, its purpose; and admire the wisdom and skill of its invisible director. But while thus engaged the machine is thrown out of gear; some accident befalls it,—a cog flies; the safety of the machine is endangered. At this stage the operator or director, who is invisible to us, introduces *another instrument*, for the purpose of correcting the fault,—and, without stopping the machine for a second, corrects the fault and repairs the wheel. The machine is repaired skilfully and effectively, and continues to produce vessels or fabrics. Would not such an instance impress us deeply with a sense of the skill and power of the operator? The only reflection we might feel disposed to make would be, why was not the machine made of better material,—material without fault,—and thus the danger arising from its breakage avoided? And this reflection is sufficiently met by the reply that it was made of the best material available.

The application of this illustration to the case of miracles is evident. This world is, in a sense, a machine, whose Builder and Director is the Invisible God. He made it for his own glory; and all its several parts are designed to contribute to that end. Through disobedience, it has failed to fulfil the purpose for which He created it. All the foundations of the earth are out of course. The defection is evident to all. At this stage God, by the introduction of a miraculous dispensation,—the sending of prophets and apostles, the mission of His Son,—seeks to correct the "fault." The miraculous dispensation is the introduction of *another instrument* for the correction of the fault, and so of restoring the world to obedience. Such a dispensation, which has been improperly described as a contrivance, is no impeachment of Divine wisdom or power. On the contrary, if it achieve the purpose for which it is introduced; if it effectually remove the stain of sin from God's universe; if it restore His world to Himself and secure its happiness upon an immutable foundation,—and these are the ends ascribed to it in the sacred writings,—it is evidence of wisdom and power which can only be described as Infinite. It is true that such a dispensation suggests an objection, not against itself, but in respect to the condition of things which made a miraculous dispensation necessary. Why, it may be asked, was man made subject to vanity? And to this question, which has pressed for solution from earliest ages, we have no reply. We can only say,—What we know not now we shall know hereafter. But the objection does not emerge for the first time in relation to miracles. It is one that belongs to any conception of life that may be formed, either by Christian or infidel. Evil is in the world (call it by whatever name we will), and the existence of a miraculous dispensation to correct it does not add to the mystery, but is in the direction of explaining it. A miraculous dispensation, therefore, is no reflection upon the wisdom and power of the Divine Being.

The existence of a Being adequate to the performance of a miracle being assumed, a miracle is in relation to Him what an act of volition, followed by an effect, is in relation to man. Man is, however, a part of nature. He is, therefore, included in our conception and definition of nature.

If he were not included in our conception of nature his action upon nature would be miraculous,—supernatural. Every time he stopped a cricket-ball, every time he lifted a body from the earth, his action would be supernatural. A little child, on such a supposition, could produce results which could not be brought about by the laws of nature (thus limited) without endangering the stability of the world. Suppose, a German philosopher says, that a pebble, instead of lying in its native bed,—the seashore,—lay some few yards, say a quarter of a mile, inland. What tremendous force in the hurricane that carried it thus far! What atmospheric disturbance to occasion such a storm! What terrible consequences involved in this disturbance,—the levelling of forests, —the destruction of cities,—the engulphing of ships! And all this because of the removal of a small pebble from the seashore, in accordance with the laws of nature (on the supposition that man's action is not included in them).

Behold how simple an explanation is given so soon as man is included in our conception of nature. A little child, playing upon the sands, picks up the pebble, carries it thoughtlessly in his hand, and casts it carelessly away! Immediately the mighty hurricane ceases, and all the mischievous consequences following in its train come to an abrupt termination.

Canon Heurtley, in *Replies to 'Essays and Reviews'* (p. 149), writes:—

"The human will is the element, the action of whose disturbing force upon the material system around us comes most frequently or most strikingly under our notice. Man, in the exercise of his ordinary faculties, is perpetually interfering with, or moulding or controlling the operation of these ordinary laws of matter, which are in exercise around him. He does so if he does but disturb one pebble in its state of rest, or stay the fall of another before it reaches the ground. He does so to a vastly greater extent when, by means of the appliances with which art, instructed by science, has furnished him, he projects a ball to the distance of four or five miles, or constrains steam, or light, or electricity to do his bidding."

So soon as we include man in our conception of nature his action ceases to be miraculous. That is, so soon as we take account of man, his interference with the course of nature occasions no surprise,—raises no presumption against the occurrence of the thing that he achieves.

In the same way, so soon as we take account of God in relation to His universe, miraculous action (His direct action upon the course of nature) ceases to strike us with the force that is expressed in the word "impossible." God is not, however, included in our definition and conception of nature. Nature is the sum of all the ordinary phenomena of the universe, which are known to us by observation, experiment, or deduction. It is, on the supposition of a Creator,—His handiwork. He is outside of and above nature—supernatural. Because He is not included in our definition of nature His immediate personal action (answering to the action of man on a lower plane) is miraculous,—a violation of the order of nature. It is the introduction of an unseen antecedent, between the natural antecedent and its natural consequent: the result of which is, not the natural consequent, but another, not in the order of nature. A is usually followed by *a*; but God intervenes between A and *a* and produces *b*; *b* is not the consequent of A, but of God, the unseen antecedent. Were He visible, as man is visible, His miraculous action would seem to be natural enough. Or, what is the same thing, did we take cognisance of Him, supernatural action would fall within our conception of things.

Suppose that I throw an iron ball into the air: it will, in obedience to the law of gravitation, fall to the earth. Suppose, however, that a human being, invisible to me, should catch the ball thus thrown into the air, and should suspend it above the ground: the agent, on the supposition, being invisible, the ball would seem to be suspended by nothing. The case would be an example of a violation of a well-known law of nature,—that of the attraction of gravitation. If the suspension could not be explained by the operation of any natural law (and it could not be so explained, as I have supposed it due to the action of an invisible agent), then it would be a miracle. But let the invisible agent be disclosed, and the suspension ceases to be a miracle. The agent is seen to come within our conception of nature. His action is, therefore, natural, being a part of the order of nature. The event is natural.

Now, instead of the agent being a mere man, let us suppose, if we may reverently suppose, the agent to be the invisible God, whose existence and operations are not usually included in our conception of nature: then the event wrought by Him is truly, and not merely apparently, a supernatural event, and is readily conceivable.

A man dies, the natural consequent of death is decay. But God intervenes, and death is followed not by decay but by life. The consequent of A is *a*, but after A, B intervenes, and *b*, not *a*, follows. Let A stand for an iron ball thrown into the air, and *a* for its return to earth. Let B stand for human action exerted to suspend the ball in the air, and *b* for its suspension. The condition supposed above is fulfilled. Let A stand for man's death, and *a* for the decay of the dead body; let B stand for Divine action, and *b* for restoration to life. The analogy between human and Divine action is complete.

As there is no difficulty in supposing or imagining the one case, so there should be no difficulty in supposing or imagining the other case.

That which human action is in relation to ordinary occurrences, that is Divine action in relation to extraordinary occurrences. A miracle, therefore, is not impossible; that is, it is not inconsistent with the Divine attributes.

Mill sums up the dispute on this point between Paley and Hume in a lucid and cogent way, and with his words I will dismiss this part of my argument, and proceed to the consideration of the second main objection to miracles.

He says (*Logic*, vol. ii., 167-8, ed. 8):—

"In the case of an alleged miracle it is asserted that the effect was defeated, not in the absence, but in consequence, of a counteracting cause, namely, a direct interposition of an act of will of some Being who has power over nature; and in particular of a Being whose will being assumed to have endowed all the causes with the power by which they produce these effects, may well be supposed able to counteract them." "A miracle (as was justly remarked by Brown) is no contradiction to the law of cause and effect; it is a new effect, supposed to be produced by the introduction of a new cause; of the adequacy of that cause if present there can be no doubt; the only antecedent improbability which can be ascribed to a miracle is the improbability that any such cause existed. All, therefore, that Hume has made out, and this he must be considered to have made out, is that . . . . no evidence can prove a miracle to any one who did not previously believe in the existence of a being or beings with supernatural power; or who believes himself to have full proof that the character of the Being whom he recognises is inconsistent with his having seen fit to interfere on the occasion in question."

THE SECOND PRINCIPAL OBJECTION,—THAT A MIRACLE IS INCREDIBLE.

That a miracle is incredible is the second main objection to miracles as subjects of testimony. Granted, it is said, that a miracle is possible, yet it is not credible,—it cannot be proved (testimony cannot reach to the supernatural).

Preliminary Form of this Objection.

The preliminary form of this objection may be thus stated: To affirm the existence of a miraculous dispensation on the authority of testimony is to strike a deadly blow at the authority of testimony itself; for it affirms the violation of the law which assures us of the integrity of testimony; it is to act like the man in the fable, who sawed off the branch of the tree on which he was sitting. We accept and rely upon the testimony of men and women who lived in past ages because we believe them to be men and women like ourselves. We believe them to be so because we believe that nature is uniform in her operations. But if nature is not uniform, as the existence of a miraculous dispensation implies, then, how are we to know that the men and women of past ages, living under a different order of nature, *were* men and women, and not monstrosities, acting from different principles, and influenced by different motives?

"All our historical knowledge depends upon our knowledge of the habits of men, by virtue of which we can infer past facts from written records. A sufficiently great change to make such records generally untrustworthy or incapable of interpretation would destroy the whole of it; but we cannot logically arrive at the conclusion that the laws of nature, which we believe to be unconditionally true, were not true in past time; for if we admit that these laws were not true we have no fixed standard by which to measure anything. . . . . Our means of looking back into the past depend upon the assumption that they were the same during the period covered by our investigation as they are now. . . . . In other words, in order to infer any fact, past or future, we must assume that there is a course of nature, that we know that course of nature, and that that course of nature has not been departed from throughout the entire chain of events, forwards or backwards, from the present circumstances on which we formed our inference, to the conclusion. . . . . In other words, any argument to prove a past event, expressed in a properly-guarded manner, would run thus:—Assuming there has been no departure from the course of nature, or, in other words, no miracle has intervened, such and such an event took place. I may illustrate this by the simplest case of inference. Suppose I conclude that some event has taken place, because a witness of good character tells me he saw it. I must in that place qualify my conclusion by the assumption that no miracle has taken place; for be my witness ever so trustworthy, be his vison ever so clear, his memory ever so good, his judgment ever so sound, it would but involve a miracle that he should deceive or be deceived."

"Arguments to prove past events are valid only in the assumption that the course of nature, as known to us, has not been departed from."

This argument has seemed to some minds to be very powerful and conclusive. The uniformity of nature is our guarantee for the likeness of the men of a past age to the men of the present age. We know the principles, motives, and habits of men now. We assume, nature being uniform in her operations, that men in the past were actuated by like principles, motives, and habits.

The fallacy of the above argument, that a miracle is destructive of the validity of testimony, may be thus exhibited in logical form:—

If testimony is true then a miracle has occurred.
If a miracle has occurred then nature is not uniform.
If nature is not uniform then testimony is not true (cannot be depended upon).
If testimony is not true then a miracle has not occurred.
If a miracle has not occurred then testimony is true.
If testimony is true then a miracle has occurred, and so on, *ad infinitum*.

Or, to express the argument symbolically:—

If A is B, C is D.
If C is D, E is not F.
If E is not F, A is not B.
If A is not B, C is not D.
If C is not D, E is F.
If E is F, A is B.

There is a well-known argument of similar construction and force, which runs as follows:—

Mendon says that all Cretans are liars.
But Mendon is a Cretan.
Therefore Mendon is a liar.
Therefore the Cretans are not liars.
Therefore Mendon is not a liar.
Therefore the Cretans are liars, &c.

Thrown into the same form the argument would run thus:—

If Mendon the Cretan's statement is true, the Cretans are liars.
If the Cretans are liars, Mendon the Cretan is a liar.
If Mendon is a liar, the Cretans are not liars.
If the Cretans are not liars, Mendon is not a liar.
If Mendon is not a liar, the Cretans are liars.
If the Cretans are liars, Mendon is a liar, &c.

An argument that can be so exhibited does not deserve serious refutation. It is obviously fallacious.

The fallacy of the original argument consists in the ambiguous use of the term "miracle." A miracle in the argument is assumed to include a change in the habits of the men of the age in which it is alleged to have occurred. "A sufficiently great change," to effect a transformation in men's nature that would remove them from the operation of principles and motives which now obtain, and leave them to the sport of chance, would, indeed, invalidate testimony. Instead of testimony having, as it is, an orderly phenomenon, it would be a portentous event due to we know not what, and would, therefore, be untrustworthy. But a miracle does not imply any such change in the course of nature. Men and women in the past came into the world just as men and women come into the world now; they were educated and trained then very much as they are now; they were actuated then by principles and motives which actuate men and women now, and, therefore, their testimony is trustworthy. When Mendon said that the Cretans were liars, he meant that some Cretans were untruthful; not that all were. When we say that the uniformity of nature has been broken, we mean not that that uniformity in all its range has been violated, but that it has been disturbed within a limited sphere. No change in men's principles and motives of action is implied.

1. *First Objection.—That Testimony cannot reach to the Supernatural.* (*Baden Powell.*)

Having dealt with this preliminary form of objection, I come now to Baden Powell's objection,—That testimony cannot reach to the supernatural. This form of the objection has reference to the capabilities of man. In consequence of the limitations of our nature, a miraculous event is beyond the scope of our faculties. Now, if by miraculous event is meant the cause,—the unseen cause,—of the event, the proposition is true.

The cause of a supernatural event is hidden from us. It is not revealed to the most careful scrutiny. But the phenomena, which are described as supernatural, come perfectly within the scope of observation. We can therefore see and bear witness to their existence as matters of fact. We see a body lying dead before us; we see the body touched, we hear it addressed, and we see it rise up to life, move, speak. These facts, it is clear, may be seen and heard, and may therefore be deposed to by those who have seen them or heard them. But the witnesses cannot bear witness to the final, though they can to the instrumental, cause. It is, of course, perfectly open to any one seeing or hearing what I have described, to say that the body was not really, only apparently, dead; or (if that supposition is not possible) to say that life was restored by some recondite law hitherto undiscovered and unknown to us. The conclusion to which the facts described above would lead reasonable men would depend upon circumstances. Suppose that a being should appear, announcing himself as a teacher sent from God to instruct and awaken mankind to a sense of their relation to Him; suppose that, in accordance with this claim, He, in burning words, exhorted men to repent and turn to Him; that thousands did so repent and turn to God; suppose that, in prosecution of His claim, and in attestation of it, He wrought miracles.

Suppose, further, that His life was in harmony with His teaching; that, so far as we could learn, He lived a pure, blameless, holy life,—we should instinctively believe that His claim was well founded. Suppose, for example, that such a person, in attestation of his claim to be a teacher sent from God, raised a dead body to life; suppose we saw Him approach a dead body,—a body that had been recently drawn out of the water in which it had been immersed for some hours,—that we saw him lay his hand upon it and speak to it, and that immediately the person, of whose death we were previously assured, sat up and began to speak, gave indubitable proofs of life,—should we not instinctively and at once conclude that he who had achieved this great work was what he claimed to be,—a teacher sent from God?

Undoubtedly we should so conclude. So that the reply to this objection of Baden Powell is, That testimony can depose to the external phenomena involved in a miracle; and that the event is miraculous is an inference which we are constrained, by the very constitution of our minds, to draw; that such inference would be drawn by the objectors themselves. Testimony can therefore, in the sense explained, reach to the supernatural; that is, a supernatural event is not beyond the reach of testimony.

2. *Second Objection; or, That the Falsehood of Testimony is more probable than a Miraculous Occurrence.* (*Hume.*)

Hume's objection is, that it is more likely that testimony will be false than that a miracle will be true. This proposition contains a fallacy which has been exposed by Archbishop Whately and others, and its removal renders the objection not merely harmless, but absolutely valuable. If the proposition means that it is more likely that *all* testimony will be false than that a miracle will be true, then no person, except one who regards a miracle as absolutely impossible, will accept it.

To put an extreme case, which illustrates the objection, literally accepted. Suppose a miraculous event to be deposed to by some thousands of persons, all intelligent, honest people, who were present when the alleged event occurred, and had used the opportunity of investigating the particulars of the fact in which they were witnesses, according to Hume's objection it is more likely that these thousands of competent witnesses were deceived, and their testimony, therefore, false, than that the fact to which they deposed happened. If the unanimous testimony of a thousand scientific men is to be rejected because it testified to the existence of an event, whose existence was regarded as highly improbable, then nothing could be proved by testimony. In the interests of mankind, therefore, the principle, as explained above, must be rejected.

But it is possible that Hume did not intend his objection to be so interpreted. Whether he wished to take advantage of the ambiguity pointed out by Whately may be doubtful; but it is probable that he did. For the tone of his essay is highly objectionable,—concluding, as it does, with a sneer. The ambiguity is, of course, in the use of the term "testimony." If the objection urged cannot mean that *all* testimony is more likely to be false than a miracle to be true, then we must impose upon it the common-sense limitation suggested by Whately, and read it thus:—It is more likely that *some* testimony will be false. Such a proposition would be perfectly correct and exceedingly valuable. It is more likely that some persons will be deceived, or will attempt to deceive, than a miracle will occur. We act upon this principle every day. If a person come with a story bordering on the supernatural, we, unless in very exceptional circumstances, quietly put his story aside, as unlikely to be true. We assume that it is more likely that some mistake has occurred, than the miraculous event. But there may be cases of such tremendous importance, where the witnesses are so exceptional that we cannot do this. In such cases we investigate, take evidence, cautiously weigh its import, and decide *according to the evidence.*

The principle teaches us not to reject all testimony, but to carefully sift and weigh it in cases of importance. Hume describes the case of a miracle in relation to testimony as a contest of improbabilities. It is improbable that a miracle has occurred; it is improbable that ten or twelve intelligent, honest men have been themselves deceived, or have conspired together to deceive others. Which is the more improbable case? A miracle involves the suspension of the ordinary laws of nature. Is this probable? The improbability is exactly measured by Paley in the "Introductory Remarks" to his *Evidences.* Antecedent to all evidence, the degree in which it is probable, or improbable, that the Author of Nature would make a revelation of His will to mankind, is the measure of the probability or the improbability of a miraculous occurrence. Suppose this condition, and that twelve men, capable and honest, testify that they witnessed a suspension of the laws of nature by one who claimed to be a teacher sent from God;—Is it probable they are lying, or are under a delusion?

A Miracle in relation to Testimony—a case of diverse, but not contradictory, Testimony.

But this is by no means the most powerful way of putting the case of miracles in relation to testimony. I should prefer to put it as a case of diverse, but not contradictory, testimony.

The laws of nature, to which miraculous operations are here opposed, are known to us mainly by testimony; and "the grand truth of the universal order and constancy of natural causes" rests upon the testimony of witnesses long since dead. The operations of nature, coming under our own personal observation, are but a fraction of the whole; nor would our own observation alone convince us of "the grand truth of the universal order and constancy of natural causes."

Men in past ages observed the operations of nature; they saw the sun rise and set; the water of the ocean ebb and flow; men born and die; and they expressed the facts they observed in general language, and so formulated laws. A law of nature, it must be remembered, is not the expression of a command, but the expression, in general terms, of a series of observations.

Dr. W. B. Carpenter, in his *Principles of Mental Philosophy* (pp. [illegible]), says:—

"It must be clearly understood that science is nothing else than man's intellectual representation of the phenomena of nature, and his conception of the order of the universe. That conception is formulated in what we term the laws of nature, which, in their primary sense, are simply the expression of *phenomenal uniformities*, having no coercive power whatever. To speak of such phenomenal laws as governing phenomena is altogether unscientific; such laws being nothing else than comprehensive expressions of aggregates of particular facts."

Mill says (Logic, book iii., chapter iv.):—

"Generalisation is either a law of nature, or a result of laws of nature. The expression 'laws of nature,' means nothing else but the uniformities which exist among natural phenomena (or, in other words, the results of induction), when reduced to their simplest expression."

It is evident, then, that our knowledge of a law of nature which is described as "the grand truth of the universal order and constancy of natural causes," is mainly the result of past observation, which is known to us by testimony.

Our own personal observation would carry us but a little way in the knowledge of the world around us, and its laws; and would by no means assure us of the constancy of those laws.

Should any one doubt the soundness of this conclusion, let him follow me carefully in the following supposition:—

Suppose that the sum of the collected labours of all philosophers and thinkers were swept away in a moment, and blotted from our memory, and that we were left without the experiences of the past to guide us in forming our opinions upon the world in which we live: should we then have that conviction of the constancy of natural operation which inspired Baden Powell's words (already quoted)? Should we then regard the supernatural as inconceivable?

Suppose that on our awakening to-morrow morning, we had forgotten all the past history of the world now stored up in historical and scientific treatises; that by some mysterious process it was blotted alike from memory and from book; that we knew nothing of the laws determining the movements of the sun and the other heavenly bodies; that we looked upon the earth with the eyes of Adam when he awoke to life; that we knew nothing of the cemeteries in which slept the bodies of our forefathers and friends; what would be our relation to the laws of nature, which, we further suppose, remained unchanged? We should be in absolute ignorance of them.

When we saw the sun go down for the first time we should fear, as the darkness crept over the earth, that he was bidding us an eternal farewell; when we saw him rise again in the east we should entertain some faint hope that he might remain with us, some fear lest he might again disappear. Much experience would be necessary to correct the one and strengthen the other. But many years of experience would not give us that sense of the stability and regularity of his movements which we now possess. Considerable variation in regard to the time or the place of his rising would be regarded with equanimity; there would be no valid reason, in the then condition of our knowledge, against them. Our sense of the stability of the sun's movements is derived not from our own observation, but from the testimony of others, which is confirmed, in part, by our own experience.

Suppose, again, that under the condition supposed above one of our number died. How should we regard his death? We should regard his condition as being analogous to sleep; we should keep his body with us as long as we conveniently could, and, when impelled to remove it, we should certainly not bury it, but preserve it in a cave or other receptacle and pay frequent visits to the place of its sepulchre, expecting the time of our friend's revival to life. When corruption and decay had done their worst, and nothing remained of the body of our friend but the mouldering bones, we should reverently and lovingly collect them and put them in some place of safety, in anticipation of our friend's awakening.

The death of another and another of our party would not be sufficient to convince us that every one must die, although it would awaken the suspicion that such might be the fate of all. The result of our own personal observation, enlarging in extent day by day and year by year, would not preclude the hope that our departed friends might one day return to us, their youth renewed as the eagle's. Should such a restoration to life be affirmed our personal experience of the operations of nature would not be sufficient to make the affirmation antecedently improbable.

Our knowledge of the resources of the world around us would be too incomplete to justify disbelief or very pronounced scepticism. This supposition enables us to see that our knowledge of the laws of nature is derived mainly from testimony. I say, mainly; for, of course, the testimony of others is in part confirmed by our own experience, but only in part, so that I repeat, our knowledge of the laws of nature is derived from testimony just as our historical knowledge is derived from testimony. As our knowledge of miraculous facts of past time is also derived from testimony, it is plain that the question of miracles in relation to testimony is a case of diverse, but not contradictory, testimony.

We have a vast mass of testimony, that the operations of nature have been, *in all cases observed by the witnesses,* of a certain kind. We have expressed the facts observed and handed to us by testimony, in what are called general laws,—the laws of nature. We have also a mass of testimony, much smaller in point of numbers, that in certain other cases, *not included in any other observation,* the operations of nature (so to speak) have been diverse. That is, that A was followed not by *a,* but by *b;* that death was followed not by decay, but by life. Now there is no contradiction here, unless the testimony of the first witnesses should include the cases dealt with by the second body of witnesses. If this were the case, the evidence of the many, equal also in other respects, would outweigh and cancel the testimony of the fewer.

But this is not the case of the miracle of the Resurrection of Jesus Christ; or of the other miracles of the New Testament. We have no adverse or hostile testimony in relation to them.

The only valid *à priori* objection that can be urged against the case of a miracle is that it is out of the ordinary course of nature; and that there is sufficient ground for presuming that nature will always and everywhere preserve the uniformity of her operations. This would be to assume the impossibility of miraculous action.

The principle which I have laid down as best expressing the case of miracles in relation to testimony,—diverse, but not contradictory testimony,—may be shortly illustrated thus:—

We have good and reliable testimony that in 999 cases A was followed by *a*. We have competent testimony that in one case A was followed not by *a*, but by *b*. The testimony is diverse, but not contradictory; for we have no other testimony dealing with the latter case. The testimony alleged in proof of it is, therefore, to be considered on its merits, remembering that it is weighted by the *à priori* objection referred to above, which suggests that it is antecedently improbable that a miracle has occurred,—that A has been followed by *b*. This improbability compels us to demand that the evidence advanced in proof of the miraculous occurrence shall be clear, complete, decisive. In other words, that it shall *prove* the alleged event. Miracles, therefore, are not incredible; but testimony to prove them must be convincing and conclusive.

B. OUR OWN PERSONAL EXPERIENCE OF THE UNIFORMITY OF NATURE INDISPOSES US TO BELIEVE IN MIRACLES.

Our unwillingness to accept the testimony tendered in proof of a miraculous occurrence arises from our own experience of the invariable character of the operations of nature. We have seen the sun rise in the east and set in the west; the water of the ocean ebb and flow; the moon wax and wane; death followed by decay. We have never known any variation from nature's uniformity. Antecedent and sequence have become welded together in our thoughts, and only the most violent effort can dissever or dissolve them. Testimony assures us that they have preserved the same indissoluble character in the past. We cannot without great effort emancipate ourselves from the conviction that they have always, in every case, obeyed the same law.

Our imaginations invest the operations of nature with the character of invariability. "All things continue as they were from the beginning."

THIS UNIFORMITY DID NOT EXIST

(a) *at the Beginning of the World.*

But it is evident by a process of necessary reasoning that the operations of nature have not always been what they are now. "There is no presumption," Butler says (*Analogy,* part ii., chap. ii.), "against some operations which we should now call miraculous, particularly none against a revelation at the beginning of the world. . . . For a miracle in its very nature is relative to a course of nature, and implies somewhat different from it, considered as being so. Now, either there was no course of nature at the time which we are speaking of, or, if there were, we are not acquainted what the course of nature is upon the first peopling of worlds." "When mankind was first placed in this state there was a power exerted totally different from the present course of nature."

Upon this argument Mozley remarks in a note to his third Bampton lecture (note 4):—

"This argument does not appear to be interfered with by anything which science has brought to light since Butler's time. It assumes, indeed, a beginning of the world," and scientific authorities state that there are no evidences *in nature* of a beginning. But supposing this to be the case, science still does not assert that there is no beginning, but only denies that the examination of nature exhibits proof that there is one. Science would, indeed, appear to be in the reason of the case incompetent to pronounce that there was no beginning in nature. (Nature, as Sir C. Lyell expressed it, has written her own autobiography,—and an autobiography cannot go back to *birth.*)

Mozley concludes, " Science, then, is not opposed to the idea of creation, because all that is essential to the integral notion of creation is a beginning, and a beginning is not and cannot be disproved by science. . . . . Taking the facts of nature *as they stand,* and abstracted from any hypothesis respecting them, the introductions of *all* new species were generally 'exertions of a power different from the course of nature.' "

Butler's contention, then, is granted,—that " when mankind was first placed in this state there was a power exerted totally different from the present course of nature."

(b) *At the Emergence of Man upon the Earth whether by Creation or Evolution.*

Let us make this a little clearer by illustration. Let us go back in imagination 7,000, 60,000, 200,000 years, until we reach a period when man did not exist upon the earth. At that remote period man did not exist. But man now exists. Whence and how did he come? Either he was created immediately, by the exertion of supernatural power, or he was evolved from some pre-existing organism. There is no other alternative. If man were created immediately, then a miracle was performed; if he were evolved from some pre-existing organism, then the uniformity of nature is not a fact.

Let us, then, assume that man was evolved; let us concede to the evolutionist the principle of life; let us concede further the development of successive and more complex forms, until at last, man's immediate ancestor (the anthropoid ape) is reached. Up to this point man, his moral and intellectual capacities, the splendid purpose in his eyes, has not existed. But now, on the evolutionary hypothesis, the anthropoid ape gives birth to a man-child. The first baby "new to earth and sky" is born into the world; the first infant wail is heard, and is hushed by the brute mother. However numerous the intermediate links, a moment must, on the above hypothesis, have come, when the brute became man, a moment when the line between man and the brute was drawn. There, on one side of that line, stands the brute father and mother; here, on the other, stands the man-child,—the rational being: and this is a miracle. Now, either the process is still going on or it is not. If not, the operations of nature are not uniform.

Should it be replied that such cases of development, from species to species, are exceptional and occur only at rare intervals, and under exceptional circumstances, then I answer that so vast a change as that of an ape into a man, if occurring only once in the history of the world, is a miracle, more difficult to believe than the resurrection of the dead.

Sir Charles Lyell (*Antiquity of Man,* chap. xxiv.) may be quoted here with effect:—"To say that such leaps (as have received the name of atavism) constitute no interruption to the ordinary course of nature, is more than we are warranted in affirming. In the case of the occasional birth of an individual of superior genius, there is certainly no break in the regular genealogical succession. . . .

Still, a mighty mystery remains unexplained, and it is the *order* of the phenomena, and not their *cause*, which we are able to refer to the usual course of nature." That the operations of nature have never varied is a proposition that cannot be maintained. A process of necessary reasoning compels us to believe that they have varied in the past history of our world. The science of geology witnesses to the truth of this position. The history of the material, as of the human world, teaches us that "there are more things in heaven and earth than are dreamt of in" the philosophy of materialism.

CONCLUSION.

No one is in a position to declare that there is no power adequate to the production of miracles; neither can he affirm them to be inconsistent with Divine wisdom and Almighty power. The phenomena usually denominated miraculous fall within the scope of testimony. There is no conflict between the testimony which deposes to the occurrence of a miracle, and that which deposes to the operation of nature. Therefore miracles may be subjects of testimony. Whether miracles have occurred, or whether we can accept their occurrence as a fact, depends upon the character of the testimony produced in proof of the alleged occurrence,—the testimony of eye-witnesses, qualified to observe correctly, and to report faithfully,—*competent* testimony. If such witnesses can be produced, bearing clear unmistakable testimony to miraculous occurrences, miracles are a fact that must be accepted.

But, after all, the case of miracles in relation to testimony will not be decided by the vast majority of men, by abstruse philosophical arguments, but by common-sense tests. Paley states the case in this way, in the "Introductory Remarks" to his *Evidences*:—

"If twelve men, whose probity and good sense I had long known, should seriously and circumstantially relate to me an account of a miracle wrought before their eyes, and in which it was impossible that they should be deceived; if the governor of the country, hearing a rumour of the account, should call these men into his presence, and offer them a short proposal, either to confess their imposture, or submit to be tied up to a gibbet; if they should refuse with one voice to acknowledge that there existed any falsehood or imposture in the case; if the threat were communicated to them separately, yet with no different effect; if it was at last executed; if I myself saw them, one after another, consenting to be racked, burned, or strangled, rather than give up the truth of their account,—still, if Mr. Hume's rule be my guide, I am not to believe them. Now, I undertake to say that there exists not a sceptic in the world who would not believe them, or who would defend such incredulity."

Such is Paley's conclusion, and such, I believe, would be the conclusion drawn by mankind generally.

The principal purpose of this paper is to deal with the objection: that a miracle is incredible,—that it cannot be proved. The paper is, therefore, defensive. Its object is attained if it prove that the objection is invalid. In aiming at this object I have considered every form of the objection presented by unbelievers. The conclusion to which my argument leads is, that miracles may be subjects of testimony,—testimony can reach to the supernatural.

It has not been a part of my object to consider whether they have actually occurred. But it will not be out of place, before concluding this paper, to indicate the kind of testimony which avouches the reality of the Christian miracles. The principal testimony on which we receive the great miracle of the Resurrection of Jesus, is the evidence of Matthew, Mark, Luke, John, Peter, and Paul. If the evidence which we have in the New Testament is genuine, no one will doubt that the testimony possesses the first qualification demanded of competent testimony,—capacity. The witnesses were eye-witnesses, and possessed of intelligence; still less will any one deny that it possesses the second qualification demanded of competent testimony,—integrity. On the above assumption, —the genuineness of the New Testament writings,—we have testimony competent to prove the principal Fact of Christianity,—the Resurrection of Jesus.

It would be quite impossible, in the space at my command, to indicate the method of proving the genuineness of the writings in question. But there is one strand of the argument which can be shortly indicated, and which is of great force. In St. Paul's universally-accepted letters (Epistles to the Romans, Corinthians I. and II., and Galatians) the Resurrection of Christ is asserted categorically, and the evidence in proof of it marshalled with legal acumen. St. Paul's evidence and belief implicated that of the other witnesses. He was the friend of Peter and John; Luke and Mark were his travelling companions. It may, therefore, be assumed with confidence that they were in accord in regard to the proof of the fundamental articles of their common belief. And, further, St. Paul became a Christian about eight years after the Resurrection. We may safely infer that his Creed in the year

58 was his Creed in the year 40, so far as the Resurrection and its proof are concerned. The evidence presented by St. Paul in his first Epistle to the Corinthians was substantially the same as that accepted by St. Paul eighteen years before that letter was written. Another inference may be drawn that the Creed of St. Paul in the year 40 was the Creed of the then Christendom,—of Apostles, Evangelists, and believers generally, so that this general conclusion is reached: A large number of persons,—Apostles, Evangelists, and believers generally, including men like Paul, Peter, John, Luke,—believed that they saw Jesus alive subsequent to His crucifixion. They believed that they saw Him, not once or twice, but several times; not in the gloom of evening, but in the open day; that He talked with them, walked with them, ate and drank with them. Such is the nature of the testimony which affirms the Resurrection of Jesus Christ. The natural and only adequate explanation of the testimony, is the Fact of the Resurrection: therefore it is reasonable to believe that Jesus Christ is risen from the dead.

The CHAIRMAN (Rev. A. I. McCAUL, M.A.).—I think all will agree that our thanks are due to the author of this paper, and also to Mr. Cadman Jones for the ability with which he has presented the paper to the meeting. As to the paper itself, although a good deal of what it puts before us exists already in other works upon the same subject: and some critics may think that the matter it contains has already been dealt with in a higher form; yet, to my mind, it is a clear, sensible, and forcible statement of the argument in favour of miracles suited to the general reader. We are met with a denial of miracles in so many different classes of society, and the denial assumes so many different forms at the present day, that I think it highly desirable that the subject should be treated frequently from different standpoints. It appears to me that the argument in the paper is both cogent and philosophical, from first to last. To those who believe in the evidence for miracles, and who feel that that evidence is overwhelmingly strong, the attitude of objectors, who altogether deny that there is any evidence for miracles, is almost unaccountable. It seems to me that the argument for miracles is much the same as the argument from design. To those who appreciate the beauty as well as the dignity of design, and who have read something of the way in which the argument for design has been formulated and presented by men of rare ability and skill, both in ancient and modern times, the attitude involved in the denial of that argument seems absolutely inexplicable. It would appear, in point of fact, to involve an inability to meet them on any common ground, inasmuch as it seems as impossible to convince them as if the argument employed has no power at all with them. I think we shall all agree that such papers as this, containing so admirable a presentation of the argument on the side of miracles, must be of great value in the case of those who have not made up their minds upon the subject, and, also, of advantage to the cause of calm and philosophical protest against what is inconsistent in argument. It would seem, however, that those against whom the argument itself is specially directed very much resemble that portion of the community who suffer from colour-blindness, or who have not the power of appreciating music. We know that there are persons who, if they had skeins of coloured wool put before them, would confuse blue with green and green with blue, and yet persist that they were right, although the great majority of mankind would take a different view. Such persons undoubtedly suffer from a physical defect. So it is with regard to music. There are some persons who appear to be utterly unconscious of the influence of sweet sounds, owing, also, to a defect in the organs of perception. Those people are to be pitied; but it is quite impossible, humanly speaking, to help them. Some communications have been received, and these the Honorary Secretary will now read.

Captain Francis Petrie, F.G.S. (Hon. Sec.) —The first communication is one from the Right Honourable the Lord Grimthorpe, until now known as Sir Edmund Beckett, Bart., LL.D., Q.C.

"I am sorry to be unable to come to the reading of Mr. Watson's paper, but perhaps written remarks on a subject which requires so much care are more likely to be useful than spoken ones. On the paper itself I have nothing particular to say beyond general agreement. The abstract or *à priori* mode of dealing with miracles which the author follows is undoubtedly the popular mode of dealing with that and most other questions at present. In this case it may be called Butler's mode, as against Paley's, which is concrete, historical, and *à posteriori*, and has the advantage of not having to assume anything, not even God, or to define anything, an operation which is seldom free from question. The turn of my mind in all matters is in favour of the latter method, though it is doubtless useful to be able to give an answer of the *à priori* kind to arguments which pretend to prove that the miracles of Christianity are incredible because they are impossible; and that because the course of nature is uniform according to the world's experience in all cases except those which are called miraculous, therefore its experience of those cases is to be thrown aside, and those events treated as if there were no testimony for them. For you must observe that is exactly what is done by all the abstract or *à priori* pretended proofs that the events which are commonly called miraculous are impossible. Moreover, all that kind of proof proceeds on a misuse of the word 'impossible,' and forgets that there is not merely a difference of degree, but a mathematically infinite difference, between any degree of improbability founded on experience or reasoning and an absolute impossibility, such as that 2 and 2 should make 5, or the sum of the angles of a *plane* triangle differ from 180 degrees, or the area or circumference of a circle be expressed in any finite number of parts of its diameter. I will not write over again here what may be read in my small *Review of Hume and Huxley on Miracles*, which may be got for sixpence from the S.P.C.K.; and therefore I will refer to that for a statement of Babbage's mathematical calculation of the balance of probabilities between an event against which the odds are a million millions to one, and the uncontradicted testimony of a very small number of persons who tell the truth only ten times as often as they do not—a very moderate degree of veracity. It follows with mathematical certainty that, if anything like '500 brethren at once' ever declared that they had 'seen the Lord after His resurrection,' especially as they had nothing to gain and a great deal to lose by saying so, the probability in favour of it overbears any conceivable *à priori* demonstration against it in a proportion of which no number of figures that could be written could convey any idea to our minds. It is true that we have not now before us the actual testimony of the 500 brethren; and if 1 Cor. xv. 6 stood as a bare assertion of St. Paul, unconfirmed by results, we should be bound to treat it as we do the assertions of the popish miracles. But though that particular testimony does not survive, its effects do; and if it was once sufficient to convert an unbelieving world, and did so, we require it no more. We are justified in believing that any murderer was justly convicted long afterwards if the evidence convinced a judge and jury at a time, though every bit of it is forgotten—always assuming that there has been no discovery of evidence the other way; and there is no pretence of any such against the Resurrection or the Ascension. Nor against the long course of preceding miracles, which the *à priori* objectors to them make no attempt to deal with or explain away; at any rate, no attempt that would be listened to for five minutes, against any other events which produced such a tremendous and abiding change over the whole world as they did, far beyond any others that have ever happened. The believers in Hume's often-exposed paradox about 'experience' are misled by a mere verbal trick. His 'experience' is only the one-sided experience of all the non-miraculous events in the world, coolly throwing aside all those, at least apparently, miraculous ones which have to be accounted for somehow or explained away somehow, and yet never are. A man who propounded a new scientific theory on the ground that it explains all the known phenomena except one obstinate set of them which he cannot get rid of, would be laughed at—or rather ought to be, and would be, if so-called science had not become so depraved by prejudice and timidity that men are allowed to pass for philosophers and solvers of the great problem of cosmogony by tracing some phenomena up to natural causes, which they call 'an insoluble mystery,' and then assuring us that all phenomena are thus accounted for. (See my paper in these 'Transactions,' vol. xvii., '*How did the World evolve itself?*') This *à posteriori* or historical mode of dealing with the question, you see, supersedes all necessity for framing definitions of miracles, on which also I refer to my aforesaid Review, exposing a quite astonishing mistake of Professor Huxley, professing to correct Hume, who was right so far. He was also right in saying that undoubtedly it is a miracle if a dead man came to life (though he himself did not believe it, or attempt to account for the general belief in it); and in my opinion it is a waste of time to argue about definitions in such a case as that. The Resurrection is either true or false, and there is no middle way. Moreover, if it is false, no conceivable ingenuity of theologians, who fancy they can make things pleasant all round by inventing clever phrases to reduce miracles to nature, can escape the conclusion that there is no such thing as Christianity, except in the same sense as there is Mahometanism or Mormonism. Christianity is not a 'moral philosophy,' though its moral philosophy is the best the world has had. It is *ipso facto*, if the Founder of it knew His own doctrine, a belief in three events or facts all contrary to the regular course of nature: His birth without a human father, which from the nature of things cannot be directly proved, but is easily credible on the evidence if the others are; and they were amply proved by more abiding evidence of results than the acts of Julius Cæsar, or even of Napoleon Bonaparte within the last 90 years. No rational way of accounting for the present state of the world and its history for 1900 years has ever been invented, except that the miracles are true. And therefore they are true."

The second communication is from the Reverend J. J. Lias, M.A., who, as Professor Lias, has already contributed more than one paper to the Institute:—

"The subject of miracles is one which, in the present changing condition of science, ought to be kept continually in view. I am glad that an able paper has been contributed to the Institute on the subject. In criticising its positions, I do not wish to weaken but to strengthen its general testimony to the truth. Mr. Watson's definition of a miracle is combined with somewhat of an attack on those who have defined the word differently. I myself, in a published work, have ventured to give a different definition. I have defined it as 'an exception to the observed order of nature, brought about by God in order to reveal His will or purpose.' But in giving this definition I have not been actuated by any desire to 'get rid of its miraculous character,' though, I confess, I have been exceedingly desirous, as far as possible, of 'minimising the force of the objections that are raised against it.' For those objections are frequently aimed, not so much at the Divine power itself overruling nature, as at the entirely unnecessary propositions which are introduced into the definition. The fact *that* miracles have occurred is one which cannot be denied without overthrowing Christianity (at least, as far as I can see). The question *how* they occurred is not a matter of faith at all. And, therefore, I think the defender of miracles should avoid encumbering himself with any theories which may involve him in unnecessary difficulty, such as that miracles are 'violations,' or 'suspensions' of the order of nature. I can hardly agree to Mr. Watson's apparent view that definitions are of no consequence. For, on the one hand, as I have endeavoured to show, definitions which go too far may involve us in needless difficulties ; and, on the other hand, unless we define of what kind or order the 'thing' is to which we give credence, it seems difficult to understand how we can reason about such things generally at all. It is, moreover, a little inconvenient to have, as on the fourth page, three, or rather four, parallel definitions of the word. Further on the thought appears a little confused on account of the want, so common in our time, of exact definition of the words used. To *what* universe does Mr. Watson refer ? Does nature comprise merely what is usually termed physical phenomena, or does he, with Spinoza, regard the word as embracing an infinity of other things beside ? And does scientific observation pretend to deal—can it possibly deal—with anything beyond the class of facts which it has been able to observe ? Science needs no amending, it seems to me, but some make it to step beyond its province, by declaring that there can be nothing higher than the laws of the visible universe with which it professes to be concerned. In page 205, if I am not mistaken, the objection to miracles on the ground of the improbability of the God of Nature altering His arrangements is a little inadequately put. It does not appear to me that the objectors deny the existence of 'contrivances' in creation, nor that they use the phrase 'afterthought.' They would object to *any* alteration of the ordinary course of nature, fore-ordained or not, on the principle of the absolute perfection of that course of nature, as coming from the Hand of God. The answer, derived from the line of thought which suggested Mr. Babbage's illustration, seems to me complete. We do not know that there is any alteration or suspension of any kind. It may be simply a case of what is constantly occurring in nature itself—the modification of any one law or force when it comes in contact with another. No thoughtful man can contemplate the phenomena of existence without seeing that a higher law than mere physical force exists, and that to it physical force is subject. To that higher law belongs the human mind and will, and, rising still farther in the scale of being, we are entitled to add, the Divine Mind and Will. It is this, and not any mere natural power, in the ordinary sense of the word, to which miracles are owing. And, it may be added, that the force which impels my hand to write these words and the voice of the reader to read them, belong to an order outside the sphere of that which is ordinarily assigned to nature, in the sense of which science investigates it. I have no wish to enter upon this vast subject at present ; but I would earnestly press upon those who reason about nature to define the extent and limits of the word before they do so. Mr. Watson afterwards includes man in nature, and, of course, if it is understood in what sense, there can be no objection to his doing so ; but it should be distinctly remembered that the laws of Mind and Will are outside the range of what is known as physical or natural science, and that a dangerous ambiguity lurks here. If you include them in nature at one moment, and expressly exclude them the next by assigning them to the sphere of metaphysics, you are involving yourself in endless possibilities of contradiction and confusion. And this confusion is increased by the fact that the laws of matter are to a great extent ascertained; the laws of mind, on the contrary, very slightly ascertained; while the laws of will can hardly be said to have been ascertained at all. With regard to the rest of the paper, its arguments seem just, although I should myself have been inclined to put them in a different form. Thus it seems to me that all nature is kept in being by a play of counteracting forces. If I throw a ball up into the air, the first law of motion tells me that it would, if left alone, go on for ever in a straight line; but the action of gravitation, and the resistance of the atmosphere, soon bring it into a state of relative rest. Spiritual forces are unknown forces; and if spiritual needs involve the necessity of interferences with the ordinary course of this world, spiritual forces will act when required, modifying without destroying the action of the rest. The objection in page 215 seems to refute itself. If we are to accept the general uniformity of law on the ground of testimony, it seems to me that we are bound to admit the occurrence of occasional departures from that uniformity on the same ground. The same principle that excludes miracles on the ground that they are opposed to the general course of things, as witnessed to by mankind, would equally exclude the possibility of all strange or unusual events and all new discoveries. Testimony deals with facts; science with their explanation. But it is impossible for science to lay down *à priori* axioms that there are not, and cannot be, forces which lie outside the ordinary range of man's perceptions. When science leaves dealing with facts, and proceeds to postulate impossibilities, she has destroyed herself. Hume's canon, quoted on p. 216, is a remarkable instance of the ambiguity of language. Taken literally, it is incontrovertible. It *is* unlikely that a miracle should happen. If it were likely, the occurrence would be no miracle. And, therefore, it is 'likely' that the testimony concerning it is false. But is it more than 'likely'? Has Hume, keen as he is, confounded 'likely' with *certain?* For there is testimony of such a kind that it is sufficient to overthrow the greatest amount of unlikeliness. And the peculiar and varied evidence which sustains the actual occurrence of the miracles of Christ is evidence of this kind. The scope of Mr. Watson's paper does not enable him to enter into this evidence. But, as a matter of fact, a large part of the case for the Christian miracles is the altogether unique character of the evidence by which it is supported, and the immense cumulative force of converging arguments of all kinds. This, however, is a question into which I cannot enter, it being outside the province of the Victoria Institute. But I may be allowed to say that it is a view of the case which is often overlooked by the defenders, and invariably ignored by the opponents, of Christianity."

A third communication is from the Rev. Prebendary Row, M.A., who dissents from the author's mode of putting his arguments, which he does not consider forcible enough.

Having read these communications, may I make one quotation from a communication in reference to miracles sent by Professor Huxley to the *Spectator* (Feb. 10, 1866) :—

> "It is, and always has been, a favourite tenet of mine, that atheism is as absurd, logically speaking, as polytheism; and that denying the possibility of miracles seems to me quite as unjustifiable as speculative atheism."

The AUTHOR.—All those who have kindly undertaken to criticise my paper, agree that discussion on the subject of miracles is highly desirable. The Chairman's remarks about the denial of miracles in various classes of society find confirmation in daily experience. The diffusion of a certain kind of scientific education has taught people the uniformity of nature, and has indisposed them to believe that that uniformity has ever been violated. This fact is one of the present-day difficulties in the way of Christianity. All, again, give a general approval of the paper, and some are good enough to speak of it in high terms of praise. I am grateful for the kind reception that has been accorded to it. In regard to Lord Grimthorpe's remarks about my adoption of the *à priori* method, rather than the Paleyan, I would say, that my argument had not reached that stage which permitted the adoption of the Paleyan method (which I value fully as highly as the noble lord himself). My immediate purpose (the present paper forming one of a series) was merely to get the evidence into court. In order to do so, it was necessary to show that the subject matter came within the jurisdiction of the court. Unbelievers say, "No amount of evidence can prove a miracle; therefore, we will not waste time in hearing evidence." My chief object in this paper is to show that the three principal objections relied upon to exclude the evidence itself, cannot be sustained. In other words, that the unbeliever's case breaks down; and that the evidence *is* admissible. The *next* step is to produce the evidence, and to illustrate its force. In regard to the remarks of the Rev. J. J. Lias, who is so well qualified to speak on the subject under consideration, I have but little to say, beyond thanking him for the careful way in which he has discussed my paper, and guarding myself against some slight misapprehension. Professor Lias' purpose is so entirely in sympathy with my own, that I accept his criticism as an endeavour to strengthen the positions of my paper. I should be sorry to be understood as undervaluing definitions. This is by no means the case. The definitions I disparage are such only as Lord Grimthorpe so caustically describes in his criticism of this paper,—definitions invented by the "ingenuity of theologians, who fancy they can make things pleasant all round by inventing clever phrases to reduce miracles to nature." I heartily agree with Professor Lias as to the value of definitions carefully drawn, and have used the term "universe" (p. 202) in such a way as to require no formal definition :—"A comprehensive conception of the universe must be consistent with all the authenticated facts of the universe." The facts of the universe include—the facts of history, the facts of testimony and mental experience, as well as what are called physical facts. Any thinker who essays to systematise the facts of the universe—that is, to form a comprehensive conception of the universe—cannot omit these facts—of history, &c. —without coming under the censure of the paper. His theory is either "not true, or not sufficient." If, for example, every man, woman, and child in the world were, at a certain and regularly-recurring hour, every day, simultaneously to experience a peculiar sensation of joy—that would be a fact of the universe. And such an undoubted phenomenon would demand from scientific observers an explanation. If scientific observation could not account for the phenomenon by its present conception of the universe, then that conception would be manifestly insufficient; and would, if it aimed at the attainment of a complete conception of the universe, have to be "amended." The term "science," I would suggest, is usually used in a narrower sense than "scientific observation." Science is popularly supposed to deal only with physical facts; "scientific observations" may be applied to facts of every kind—all the facts of the universe. The remainder of the Rev. J. J. Lias' paper may be read as additional to my own, in which my contentions are, I trust, put philosophically, and sustained by forcible arguments. I have only, again, to thank the Institute for the kind reception given to my paper; and to add that, through the indulgence of the Council, I have added a paragraph setting out the character at once of the testimony on which the great miracle of Christ's Resurrection is received by believers.

The meeting was then adjourned.

ORDINARY MEETING, April 5, 1886.

W. N. West, Esq., in the Chair.

The Minutes of the last Meeting were read and confirmed, and the following Election was announced :—

Associate :—Miss M. H. Cust, London.

Also the presentation of the following works for the Library :—

"Transactions of the Royal Society."	*From the same.*
"Transactions of the Royal Geographical Society."	"
"Transactions of the Royal Asiatic Society."	"
"Transactions of the Philosophical Society of America."	"
"Transactions of the United States Geological Survey."	"
"Mr. Gladstone and Professor Huxley," by Rev. B. W. Savile.	"
"Present Day Tracts," Religious Tract Society.	"
"Origin, Habits, and Diffusion of Cholera," by Sir J. Fayrer, K.C.S.I.	"
"On the Vertical Range of Certain Fossil Species," by Professor Claypole.	"

The following paper was then read by Mr. H. Cadman Jones, M.A. :—

IS THE ACCOUNT OF THE CREATION IN GENESIS ONE OF A PARALLEL SERIES? By W. P. James, Esq., M.A., F.L.S.

[Few have taken a more earnest part in the work of the Institute than Mr. W. P. James, F.L.S., and the following paper is the last of his many valued contributions to the Proceedings of this Institute. As he passed away shortly after completing the MS., the proof-sheets did not receive his final revision.]

1. FEW things are more remarkable than the spirit of research which is characteristic of our own times. The same stirring nineteenth century, which has witnessed novel and startling triumphs over the forces of Nature, has also witnessed an astonishing revival of interest in the history of antiquity. The sculptured stones and papyrus rolls of Egypt, the inscribed tablets of Babylonia and Assyria, are no longer silent. It would almost seem as if the intellect of a

busy and restless generation sought relief and refreshment in going back to the calmer atmosphere and less feverish life of the remote past. It is true that much of the re-discovered matter is little more than the driest and crudest materials for history. Beauty of style and elevation of thought are rarely present in these archaic records. This drawback is inevitable, and is really a measure of the enormous moral and intellectual debt which the world owes under Providence to the Jew, the Greek, and the Roman. Still, if the facts are often barely stated, they are, nevertheless, facts, and throw a flood of light on the early condition of Western Asia and Egypt. Few branches of study are more affected by this novel and powerful instrument of research than Biblical archæology. The late highly-gifted decipherer, George Smith, went so far as to call his interpretation of some clay tablets the Chaldean account of Genesis. This ardent enthusiasm is pardonable in one of the pioneers of a new study, for without it who would face the terrible difficulties which lie in the way of the beginner? But subsequent reflection will usually estimate the results gained more soberly. At any rate, the Creation-tablets are interesting, although their relation to Genesis may have been entirely or partially misconceived. Above all, they suggest the question which I propose to discuss this evening. Is the account of the Creation in Genesis one of a series? which to many minds would mean, Is it a mere human tradition or legend, or does it stand alone as the sole authentic form of an original revelation?

But our knowledge of the infancy of our race is too imperfect to allow anything more than a probable answer to this question when treated from a purely historical point of view, which I conceive to be the only mode of treatment which suits a Society like the Institute founded for impartial investigation.

2. It would be impossible, within the limits of this paper, to give an exhaustive account of all the traditions of the Creation to be found scattered about among the nations of the whole world. Nor is it necessary for our purpose. They are generally to be reduced to three classes—the philosophical, the mythological, and the historical; and we need only consider the oldest or clearest types of each class. The myths of savages have scarcely any historical value. They are usually recent in date,—or, at any rate, *cannot be proved to be old.* They are often mere ignorant distortions of Christian, Jewish, or Moslem teaching which have filtered through the intervening strata of population from some civilised settle-

ment. At other times they are merely the weathered relics of an almost-forgotten religious system. The New Zealanders may be taken as a fairly-known example. According to their own admission, they have arrived by sea in their present homes, and Mr. Gisborne (in the ninth edition of the *Encyclopædia Britannica*) says that probably not more than five centuries have elapsed since that event took place. It is obvious that they must have brought their traditions with them, and, as a matter of fact, what cosmology they possess seems only a variation of a widespread Eastern form of emanation. To go to savages for the opinions of primeval man is a grotesque paradox, and can only be justified by a thorough misconception of the past. This unhistorical method has led the Rev. T. K. Cheyne into some crude statements in his article on "Cosmology," in *Encyc. Brit.* (ninth edition).*

3. Theories of Creation admit of being roughly classed as—

(I.) Those which bear traces of a primeval tradition, and in form resemble historical documents.

(II.) Those which have a mythological stamp, and probably arose from the hardening of symbolical language.

(III.) Those which appear to have sprung from independent speculation, the philosophical or metaphysical cosmogonies. But it must be distinctly understood that these classes cannot be separated by any sharp line of demarcation. On the contrary, they run into each other, and it is still possible that a cosmology mainly philosophical or mythological may retain traces of old tradition.

4. *Egypt.*—The immense antiquity of civilisation in the Valley of the Nile makes it a matter of course that we should begin with Egypt. But here we meet with great difficulty in getting at any consistent theory of Egyptian religion. According to most authorities there were many local sets of gods, and in consequence of this multiplicity of cults it is not likely that there was any uniform and generally acknowledged account of creation. Canon Rawlinson tells us (*Hist. of Ancient Egypt*, vol. i., p. 313) that Egyptian religion had "two phases or aspects,—one that in which it was presented to the general public, or vast mass of the population; the other, that which it bore in the minds of the intelligent, the learned, the initiated. To the former it was a polytheism of a multitudinous, and in many respects of a gross, character;

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* The most obvious defect of this article is the omission of Hindoo and Greek cosmology; but many readers will regret what seems to them its lack of reverence and insight.

to the latter it was a system combining strict monotheism with a metaphysical speculative philosophy."

Now, if we consult the translations that have yet been published of the monuments, we find mixed up with abundance of polytheistic details striking assertions of the fact of creation, without any attempt to descend into particulars. Thus, in a hymn addressed to Ammon-Ra, the Sun, we read (*Records of the Past*, vol. ii., p. 131):—

> Hail to thee, Ra, lord of truth !
> Whose shrine is hidden, Lord of the gods ;
> Creator, sailing in thy boat;
> At whose command the gods were made ;
> Turn the maker of men.

Again, in the same hymn (p. 133):—

> The spirits thou hast created exalt thee,
> Rejoicing before the feet of their begetter.
> They cry out welcome to Thee,
> Father of the father of all the gods ;
> Who raises up the heavens, who fixes the earth.
>
> . . . .
>
> Maker of beings, Creator of existences,
> Sovereign of life and health and strength, chief of the gods ;
> We worship thy spirit which alone has made us ;
> We, whom thou hast made, thank thee that thou hast given us birth.
> We give praises to thee for thy mercy towards us !

In other documents the god Pthah (Hephæstus of the Greeks) is spoken of as "he who moves the egg of the sun and moon" (apparently an allusion to the widespread conception of the nascent world as an egg which a god cleaves asunder), "the weaver of the beginnings," "the father of the father of the gods," "the creator in heaven and on earth, who has made all things, the lord of all that is and is not" (Duncker, *Hist. of Antiq.*, vol. i., pp. 43-4).

Taken by themselves, these lofty utterances seem to be echoes of primeval revelation. At any rate, their great antiquity gives them immense value. As far as written history goes back, this is the voice of early man, and not the coarse guesses of rude barbarians. At the same time it must be remembered that this creation was ascribed promiscuously to many gods, even to the comparatively insignificant Nile. Side by side with these sublime expressions of a purer faith, speculative and mythological cosmologies existed. Diodorus Siculus knew of one in which a self-begotten wind began to breathe over Chaos; the elements then proceeded to sort themselves according to their weight and other physical qualities, until Land and Sea were distinct from each other. From the soft slime of the still moist earth the Sun's rays produced various animals. But it is impossible to say how far Diodorus has altered the legend, which in itself has not a very archaic look. In consequence of the obscurity and uncertainty still brooding over the subject of Egyptian religion, we must leave their cosmogony without any further comment. Probably, in any case its intensely idolatrous outer form would render it thoroughly distasteful to the Hebrew sojourners in Goshen. This consideration seems to suggest a reasonable explanation of the silence of the Pentateuch about a life after death. The Jews in Egypt must have been most familiar with the conception. The trial-scene of the departed soul before Osiris met their eyes on a thousand tombs, and was wrapped up in a thousand papyrus rolls, but accompanied everywhere by grotesque, repulsive, and ever hideous symbols. No wonder that Moses was silent about a doctrine thus saturated, to his mind, with polytheistic errors,—and, indeed, almost bound up with the worship of Osiris. Moreover, the Egyptian religion in general was one of terror and mystery, suited for a nation of slaves. The escape from the colossal temple-courts of the Delta of the Nile to the free air of the desert of Sinai was religiously, as well as politically, an exchange of servitude for liberty.

5. *Chaldea.*—If Egyptian literature, as far as we know it, seems to have exerted little or no influence on the Jews, many are inclined to ascribe a very different rôle to that of the early Chaldeans. The deciphering of the cuneiform inscriptions is so wonderful a feat of patience and sagacity that criticism is almost silent in the face of such unexpected additions to our knowledge. And no one can quarrel with Assyriologists for assigning a high value to their own discoveries. I may assume that the members of this Institute are familiar with the facts of the discoveries made under the rubbish-mounds of Babylonia and Assyria, many of them by our valued fellow-member, Mr. Hormuzd Rassam. Consequently, without any further preface, I may advance to the examination of the famous Creation-tablets.

When we compare them with the account in Genesis, the first thing to bear in mind is that the Chaldean account, as we have it, is admitted to be a comparatively modern recension. Professor Sayce says (*Chaldean Account of Genesis*, by George Smith, new edition, 1880, page 56):—"It is evident that in its present form it was probably composed in the time of Assur-bani-pal (who reigned from B.C. 668). It breathes throughout the spirit of a later age, its language and style show no trace of an Accadian original, and the colophon at the end implies by its silence that it *was not a copy of an older document.* . . . . Excavations in Babylon may yet bring to light the early Chaldean form of the legend. *But this we do not at present possess.*" If this be really the case, why has it been paraded as a parallel to a very much older record?

In the next place, it is now admitted that it was premature to describe it as a record of a six-days' creation; as a matter of fact, the first tablet itself alludes to "a long course of days." Of course, we must remember that the tablets are mutilated.

But the immense gulf which separates this cosmogony from that of Genesis will be best seen by actually quoting the so-called First Tablet:—

> When above the heavens were not yet named,
> And below the earth was without a name,
> The limitless abyss was their generator,
> And the chaotic sea she who produced the whole.
> Their waters flowed together in one,
> No flock of animals was yet collected, no plant had sprung up.
> When none of the gods had as yet been produced,
> When they were not designated by a name, when no fate was as yet (fixed),
> The great gods were then formed,
> Lakhmu and Lakhamu were produced (first),
> And they grew in (solitude).
> Asshur and Kishar were produced (next),
> (Then) rolled on a long course of days (and)
> Anu (Bel and Hea)
> (Were born) of Asshur and of Kishar.*

Now, what we have here is, in reality, a cosmology like that of the Hindoos or ancient Greeks, and not an historical statement like that of Genesis. It begins with pre-existent matter which has apparently had no origin out of itself. From this primeval matter the universe is conceived of as arising by a series of self-begettings or developments, among the products of which are "the great gods" themselves. The notion of creation proper is absent. And here, perhaps, it is time to give a definition of creation. I will do so not in the language of theologians, who may be supposed to have taken a side, but in that of philosophers, as given in Franck's

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* The translation is taken from Lénormant's *Beginnings of History*, Eng. trans., p. 491, and varies slightly from that given by Prof. Sayce.

Dictionnaire des Sciences Philosophiques. The editor of that work himself defines creation proper as "the act by which the Infinite Power, without the assistance of any pre-existing matter, has produced the world and all the beings which it contains" (under word "Creation"). That such an act as this is implied in Genesis has been the opinion of almost* all subsequent Jewish writers, both canonical and Rabbinical. Returning now to the First Tablet, we see that the resemblances between it and Genesis are superficial, the differences profound. As to verbal coincidences, could they be avoided in two kindred languages when treating of the same subject? To identify Lakhmu and Lakhamu with the Ruach or spirit of Genesis seems precarious. As for chaos, is it not an unhistorical anachronism to read it into Genesis? The Revised Version says:—"And the earth was waste and void; and darkness was upon the face of the deep: and the spirit of God moved upon the face of the waters." Now, this is certainly not chaos, in the usual sense of the word—that of a confused jumble of heterogeneous elements. But if chaos be taken in the older Hesiodean sense of *empty space*, I will admit that it corresponds with "waste and void." When we proceed to the later tablets, we have details about the sun, moon, and stars, plants and animals. But what cosmology can avoid these particulars, as soon as it descends to details? On the whole, I agree with François Lénormant, that the Chaldean account is a cosmogonic epic (épopée cosmogonique). Still, I am willing to admit a basis of primeval tradition preserved in the tablets, much distorted, mixed with mythological and cosmological accretions, and in any case obviously later than the Biblical account.

It is now time to recall to our minds the significant fact that the Chaldeans had other legends about the Creation besides this. Berosus, as reported by Alexander Polyhistor, has quite a different story—one truly mythological. According to this writer,—whose date is about 250 B.C., and who may be accepted as an authority on the opinions of his own countrymen,—Oaunes, the fish-god, who rose up from the Persian Gulf, taught the people as follows:—There was originally a dark, watery chaos, over which a gigantic Sea-woman, Markaja, or Homoroka, reigned. These gloomy depths were peopled with hideous monsters,—creatures made up of limbs from different animals, prodigious productions with multiplied heads or bodies. The god Bel then cleft this woman in twain. Of one half he made the heaven, and of the other the earth, while at the same time he destroyed the monsters which previously existed. Bel then cut off his own head: the inferior gods mixed the blood which flowed from the wound with clay, and so made men. In this fanciful myth I cannot follow Canon Rawlinson in seeing any resemblance to Genesis. Rather it belongs to a series of similar legends, in which the creation of the visible universe is described as proceeding from the fragments of the body of a gigantic human being. The Scandinavians had their giant Ymir, the Chinese their giant Pankee, produced from the world-egg, and there are other traces of this strange notion in other countries.

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* The one apparent exception in *Wisdom* xi. 17, *ἐξ ἀμόρφου ὕλης*, proves little: the author does not assert that the *ἄμορφος ὕλη* was uncreated. It is merely an inference made by modern critics.

As there were thus different Babylonian cosmological myths in existence, it is obviously incorrect to speak as if there were only *one* Chaldean account of the Creation.

6. *Old Persian and other quasi-historical Cosmologies.*—It will be most convenient to group together those of the older cosmologies which seem most faithful to the primeval tradition of the nursery of the race. According to Zöckler (art. "Schöpfung," in Herzog and Plitt's *R. E. für protestantische Theol.*), the Zend-avesta represents Ormuzd, in conjunction with the inferior spirits, the Ameska-speutas,* as creating the world in six periods, each of a thousand years, and through his word (Honover). The order of the creative acts is thus given:—(1) Heaven and light; (2) Water; (3) the Earth, and especially the sacred mountain Albordj, or Elburz; (4) Trees; (5) Animals—all derived from the primeval ox; (6) Men—all descended from the primeval man, Kajomort. According to François Lénormant, the six creative periods are conceived as together lasting for 365 days.

It is a very difficult point to settle whether the old Persian theology assumed creation out of nothing. On the whole, it agrees better with the general spirit of their religion to understand their creation as a form of Emanation. Dogmatic assertion one way or the other is obviously what no student with any self-respect will commit himself to.

Another singular echo of Genesis is found in the Old

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* These are emanations from Ormuzd; personified attributes. It is ludicrous to compare them with Angels; what they really resemble are the Sophia, Buthos, &c., of the Gnostics.

Etruscan account, if we can trust so late a writer as Suidas (under *Τυῤῥηνία*), who wrote in the tenth century A.D. According to this, the world was created in six periods of a thousand years each, in the following order:—(1) Heaven and Earth; (2) Vault of heaven; (3) Sea and other waters; (4) Sun, moon, and stars; (5) Animals of air, water, and land; (6) Man. Coincidences with Genesis so remarkable throw some suspicion on so late a report: it may be taken for what it is worth.

A similar doubt attaches to the Phœnician cosmology given as Sanchoniathon's by a Greek translator, called Philo of Byblos, who lived in the latter half of the first century A.D. The very existence of the assumed Phœnician original is disputed, but the work may still embody genuine Phœnician myths. The legend runs:—At first there was a dark chaos; a wind blew over it, and so arose Desire or Longing. From their union came the fruitful primeval slime which contained the germs of all things: then the heaven was formed like an egg, out of the broken shell of which came sun, moon, and stars: then the air and sea, clouds and winds, thunder and lightning. Waked by the roll of the thunder, primeval man appeared.

7. *Hindoo Philosophy.*—We now advance to those theories of creation which seem to have arisen from speculation pure and simple. The clearest type of these is the Hindoo, which is a system of Emanation. It was not developed in its fulness at once, but was preceded by a simpler Nature-worship, in which honour was chiefly paid to the sky, sun, clouds, and winds.

The earliest form of the nascent philosophical system appears in the later parts of the Vedas as follows:—"Let us set forth the births of the gods in songs of praise and thanksgiving. Brahman-aspati blew forth these births like a smith. In the first age of the gods, Being sprang out of Not-Being. There was neither Being nor Not-Being, neither air nor heaven overhead, neither death nor immortality, no division of day or night; darkness existed, and this universe was indistinguishable waters. But the "that" (from which was nothing different, and nothing was above it) breathed without respiration, but self-supported. Then rose desire (*kama*) in it; this was the germ which by their wisdom the wise discovered in their hearts as the link uniting Not-Being and Being; this was the original creative seed. Who knows, who can declare, whence has sprung this creation? The gods are subsequent to this; who, then, knows whence it arose?"

Here we see a few traces of tradition, but the scheme is fast becoming a cosmology,—a self-begetting process.

But the reflective Hindoo intellect afterwards advanced to a profound and thorough-going form of Pantheistic Emanation, which I shall give in Professor Duncker's words, occasionally abridged (*Hist. of Antiq.*, vol. iv., p. 300, and elsewhere).

Brahman—such is the line of argument in the Vedanta—"is the one eternal, self-existent essence, unutterable and unchangeable. It developes into the world, and is thus creative and created. As milk curdles, as water becomes snow and ice, Brahman congeals into matter."

It becomes first ether, then air, then fire, then water, and then from water it becomes earth. From these elements arise the finer and coarser bodies, with which the souls of the gods, spirits, men, and animals are clothed. These souls go forth from Brahman like sparks from a crackling fire,—a metaphor common in the book of the law; they are of one essence with Brahman, and parts of the great world-soul. (Elsewhere, the order of their emanation from the impersonal one is given thus:—(1) Personal Brahman; (2) old Vedic gods, such as Indra, &c.; (3) air-spirits; (4) holy and pure men; (5) animals, plants, and finally stones and inorganic matter.) This soul is the world, but also outside and above it; to it must everything return, for all that is not Brahman is impure, without foundation and perishable. In this view there lies a contradiction which did not escape the keen penetration of a reflective spirit. Brahman is intended to be not only the intellectual, but also the material basis of the world. It is regarded as absolutely non-material, eternal, and unchangeable; and yet the material, changeable world is to rise out of it, the sensible out of the non-sensible, and the material out of the immaterial. In order to remove this dualism and contradiction which the orthodox doctrine introduced into Brahman, the speculative Hindoos seized upon a means which, if simple, was certainly bold: they denied the existence of the whole sensible world, they allowed matter to be lost in Brahman. There is only One Being; this is the highest soul (param-âtman), and besides this there is nothing. What seems to exist beyond this is mere illusion. The world, *i.e.*, matter, does not exist, but only seems to exist, and the cause of this illusion is Maya, or deception. Of this the sensible world is a product, like the reflection of the moon in water, and the mirage in the desert. . . . . This universal deity is conceived of as a being at rest; its activity and development into a sensible world is only apparent. It is a Pantheism, which annihilates the world; matter and nature are completely absorbed by the world-soul—are plunged and buried in it.

Such is the mature system of the Pedanta, but many others coexisted with it. Thus, the Sankeja system starts not from unity, but from two principles, mind and matter. These two alone have existed from the beginning, uncreated and eternal.

Then, again, we find mythological legends of the Creation, as, for instance, in the Law-book of Manu, in which the world's egg, which is cleft in twain, and other familiar elements, reappear.

8. *Greek Cosmology.*—The Greek views about the origin of all things are interesting from the genius and originality of the writers and the incomparable beauty of the language in which they clothe their thoughts. From first to last they were of the Aryan type, excluding creation proper, and dwelling chiefly upon the notion of self-development and growth. The oldest cosmogony now in existence is Hesiod's *Theogony,* whose approximate date is the middle of the eighth century B.C. His work, however, has the appearance of having been partly borrowed from earlier sources. The following is a version more or less condensed:—

Verily first of all there came into being Chaos, but afterwards
The broad-bosomed Earth, (to be) the safe foundation for ever
Of all the immortals who hold the summit of snowy Olympus,
And misty Tartarus in the recess of the wide-traversed land,
And Love, fairest among the immortal gods;
And from Chaos were born Erebos and dark Night,
And from Night again sprang Æther and Day.
And the Earth brought forth the starry Heaven and the Mountains
 and the Sea,
Afterwards the Earth was wedded to Heaven, and their
Offspring were six Titan brothers and six Titan sisters.

In all essential points this system agrees with the Hindoo, especially in the early appearance of love (Eros in Greek, Kama in Sanscrit). Hesiod's chaos is usually interpreted as meaning "empty space," and must be carefully distinguished from the latter conception, which, however, dates back to Anaxagoras.

Greek philosophy attempted by sheer thinking to carry on the problem thus started by the Cosmogonists. The earliest Ionic school chiefly asked itself what was the primeval matter out of which the universe evolved itself, gods and all.

Heraclitus, a daring thinker, who sought the first substance in fire, shows a striking resemblance to Zoroastrianism. Anaxagoras was the first who substituted the idea of a mind apart from matter for the original hylogoism, which considered matter as itself animated. In the language of philosophy, he became a Dualist as opposed to the earlier Monists. His own words were, "All things were together, and mind came and separated them." But matter was to him eternal, and so it continued to be through all the schools of Greek philosophy.

The Greeks were never tired of saying, "Nothing comes from nothing": a law true of the usual course of nature, but one which can easily be conceived as infringed at the beginning of nature. As a matter of argument, moreover, the eternity of matter presents as many speculative difficulties as its original creation. The object of my paper being historical, I need not pursue this part of the subject any further.

It will be enough to bear in mind that when Xenophanes, Socrates, Plato, and Aristotle reached the great truth of the Unity of the Godhead, they did not advance to the further truth of His Supreme Creative Power. Plato's *Timæus*, in parts, is a remarkable work, and amidst its crudenesses and Oriental elements bears here and there a singular resemblance to Genesis. But the god of the *Timæus* is the artificer, the moulder, the demiurge of matter, which existed from all eternity, and is not quite obedient to him. Great confusion of thought would follow if the convenient word "demiurge" be used as a loose synonym for "creator": it should only be employed in its proper platonic sense.

9. The general conclusions to which I have been led are as follow :—

(1) In a few cosmologies the coincidences with Genesis are astonishing. This is especially the case with reference to those which present an historical form, but it occurs, though to a less degree, in the mythological legends. In the metaphysical systems all connexion with the traditional past is cut off.

(2) The cosmologies which resemble Genesis may be considered as representing, more or less, distorted forms of the original primeval tradition handed down from the first patriarch. No certain fact of history is opposed to this hypothesis, while many favour it.

(3) No existing account can be fairly described as parallel to Genesis, chapter i.

(4) The unique character of the account in Genesis arises from many elements. Its pure Monotheism, the total absence

of grotesque and mythological details, its sublime brevity are obvious to all, and have extorted the admiration of the heathen Longinus. A more subtle distinction from all other cosmologies, with the doubtful exception of the Zoroastrian, is that it implies the original creation of matter by God. Such a notion as creation *ex nihilo* could never have risen spontaneously among early men. And yet it is embodied in possibly the oldest document in existence. In this fact is found a strong presumption in favour of its having been a special revelation.

The importance of creation *ex nihilo* belongs to the province of theology, from which I am properly excluded by the historical method to which I have adhered. I will conclude with expressing my own personal conviction that in this venerable document we probably have a record handed down from father to son as far as Abraham, by Abraham brought into Palestine, and ultimately committed to writing by Moses.

The CHAIRMAN (W. N. WEST, Esq.).—In offering the thanks of the meeting to Mr. Cadman Jones for the admirable manner in which he has read this paper, we must all feel a deep regret at the loss the Institute has sustained in the death of its talented author. We shall now be glad to hear any remarks that may be offered by those present.

Mr. W. ST. C. BOSCAWEN, F.R. Hist. Soc.—The paper read this evening is one of great interest, especially at a time like the present, when the first chapter of Genesis has called into play two of the greatest minds in England; for, when we find men like Professor Huxley and Mr. Gladstone fighting over that particular portion of the Old Testament, we may feel assured that it is undergoing very severe criticism. The subject embraced by Mr. James's paper is one to which he has given a wide scope, and, if I may be permitted to say so, I am afraid the author has taken almost too extensive a range, inasmuch as, in my humble opinion, the Indian and Greek traditions, to which he has referred, can hardly be brought within the limits of this discussion, because we scarcely know the sources from which they come, and, moreover, they differ so essentially from the older Hebrew and Chaldean traditions that they ought not to be admitted into a consideration of the relationship borne by the first chapter of Genesis to the really old traditions of the world's cosmogony. If we look into the traditions that have come down to us, we find that there are three which stand out distinctly as what are known as *the* ancient traditions, and they are also remarkable from the fact of their close relationship to each other. These three traditions are, first, the Phœnician, secondly, the Hebrew, and thirdly, the Chaldean, and it is evident that they have a common origin, as far as locality is concerned. It is now very generally admitted that the Phœnicians came from the shores of the Persian Gulf, and few will deny that the same land was the birthplace of the

Jewish people, nor that the Chaldeans are inhabitants of the same part of the globe. I differ very much from the author of the paper, for I think there was a great deal more in common between these peoples than he has been able to see, partly, I suppose, because he has been dealing with M. Lenormant's translations, which do not bring the fullest light of history to bear upon the subject, while there are a few works that have been written since that of M. Lenormant which would have thrown more light on the question. There is one, indeed, which I think every clergyman who wishes to understand the first chapter of Genesis would do well to consult; I refer to Professor Schräder's Commentary on the "Cuneiform Inscriptions and the Old Testament," in which the points of contact between the Hebrew and the Chaldean traditions are brought out very clearly, without any attempt at enforced agreement; indeed, if anything, I think there is too conservative a spirit exercised, although that, in my opinion, is much better than rushing into hasty conclusions; and here I should like, for a moment, to allude to these points of contact, as they may be put forward. I should say that I have treated this subject very fully in one of my Museum lectures on the Creation, delivered some time since, but subsequently published in a work which was issued last year, and most of the arguments on the matter may there be found; there are also one or two points upon which I should like to add a few words. The revised translation of the first chapter of Genesis brings out these points a little more clearly than before. The first point is this—that both the Hebrew and Chaldean accounts start with the idea of a pre-existent earth; both presenting the same conception, that the earth was unnamed—that is, without order or arrangement, without form, and void—and that the whole was shrouded in darkness. Here I can hardly conceive on what ground the author of the paper has proceeded. He says, on page 240: "To identify Lakhmu and Lakhamu with the Ruach, or Spirit of Genesis, seems precarious." I do not know whether he refers to an identification by M. Lenormant; but, if so, I agree with him that that is very hazardous. There is, however, a reasonable identification to be made; for in the third line of the first of the Chaldean Tablets we have the limitless abyss as the mother, or rather, not exactly the mother, but the source of the offspring, of Lakhma; and the word *absu*, "the abyss," is explained in bi-lingual Tablets as "house of wisdom," *absu* itself having the abstract idea of wisdom. Thus we have the same idea as that which we get in the eighth chapter of Proverbs, as to wisdom being the beginning of all things—"I was set up from everlasting, from the beginning, or ever the earth was." We have also another point of contact, even more striking, in that, both in the Hebrew and Chaldean accounts, the greatest prominence is given to light as the first product of Creation. There is one line on this Tablet which was a puzzle to Assyriologists for many years. The first word on that line was never found in any other inscription, so that it was isolated, and difficult of explanation; but Dr. Haupt and Dr. Schräder have at last succeeded in getting at the full translation. M. Lenormant had guessed at it, as most of us had,—"No flock of animals was yet collected; no plant had sprung up." The last part of the line was right, and the meaning of the line is: "The darkness had not withdrawn." Now, "gipara" is explained to mean the great darkness—"the great darkness had not been gathered up," or "the veil of darkness had not been drawn back." Then follows the sequence, and "plants had not sprung up." There being no light there could not be any vegetable product; so that the necessity for light in the production of plants, and of life generally, on the face of the earth, is here recognised. As I have suggested in my lectures, the two words Lakhmu and Lakhamu came from the root Lakham, which means to struggle and fight, and, also, to divide; and thus these names may be taken to signify the division between the upper and lower halves of nature—between the earth and the heavens—corresponding to the firmament in Genesis. Professor Sayce intimated—at the very time I had made the same suggestion, not having seen that of Professor Sayce,—that Assar and Kisar really mean the Host of Heaven and the Host of Earth. Thus we have a parallel to what we see in the second of Genesis, where allusion is made to "all the host of them." Now, Assar corresponds exactly to *tseba hashshamaim*, the Host of Heaven. It means really, that all the essences of earth and heaven were separated from each other, so that the agreement between this and the Tablets on that point is more close than would at first appear. I now come to speak of a more important question, which I think we must consider, inasmuch as the author of the paper altogether takes the historical line of argument to be a question of age. The author says, quoting Professor Sayce,—"It breathes throughout the spirit of a later age; its language and style show no trace of an Accadian original, and the colophon at the end implies, by its silence, that it was not a copy of an older document." I believe, however, that it does show traces of Accadian origin, and that it is evidently of ancient date. But we cannot place the formulation of that document—though it was probably not the same form as that in which we have it, but slightly different, and possibly more crude in style—later than 2000 B.C. The reasons on which I found this conclusion are very clear, and I will state them as briefly as I can. In the first place, I would point to the resemblance of this document and the other Creation Tablets, and especially of the 5th Tablet, of which we have the largest portion, to other religious texts. There are phrases which occur in Hymns and in Litanies which are as old as 2000 B.C.; and there is also to be noticed the same arrangement of the Pantheon of the Gods that occurs in the inscription of Khammurabi 120 B.C. There is every indication that the Pantheon of that time was arranged on the same lines as that of the time of Assur-bani-pal; but the strongest evidence as to date is that obtained from the 5th Tablet of the series. That Tablet does not come into the scope of the author's paper; but if it had, it would have assisted him materially in proving his point. It relates to the creation of the sun, the moon, and the stars; and in many details agrees in a remarkable manner with the first chapter of Genesis; and, although there are differences in some, it is those very differences which enable us to judge of its antiquity. In the Hebrew account of the creation of the great lights, it will be remembered that they came in the order of the sun, the moon, and the stars; but this order is reversed in the Chaldean Tablet, where we get the stars, the moon, and then the sun last of all. As I have pointed out in my book, this argues an antiquity which is very great in one way, because we know that the moon, in the old system, always had priority of the sun. Again, it indicates that the tradition must have been drawn up by a pastoral people, to whom the moon was always more favourable, and by whom it was held in greater respect than the sun. In fact, the general grouping of this Tablet shows that it was written at a time when the Babylonians had not shaken off the earliest traditions of their old moon-worship, and become attached to the worship of the sun, as they did at a later period. I now come to the still more difficult and dangerous question of the earlier form of these legends, and here I would refer those who wish to study the subject to two remarkable articles that have recently appeared. One is a paper by Professor Dillmann on the origin of the Hebrew traditions, which was read before one of the Berlin Societies; the other is an article written by Canon Driver, in the January number of the *Expositor*. In both of these, the first chapter of Genesis is discussed by these well-known scholars, who throw great light upon the question. If you take the traditions of Chaldea and those of Phœnicia, and place them side by side, you will find certain common features. As I stated at the commencement of my remarks, you will find that the three nations, having the three oldest cosmogonic traditions, all came from the same locality; and I was glad to see that Dr. Schräder had come to the same conclusion as myself, namely, that these traditions are in reality much older than we at first supposed, and that there might have been a time when there was a common tradition of the beginning of all things current among the Semitic people, which, perhaps, in Chaldea, became slightly tainted with Accadianism, and in Phœnicia, probably, slightly influenced by Egyptian teaching, so that it has come down to us in forms different from the primal tradition. Still, I say that underlying all this there is a common tradition which, if you strip it, as an expert might strip it, from its Accadianism and Egyptian influences, and lay it side by side with the account in Genesis, will show a remarkable agreement pointing to an old primal stock from which all came. It is these traditions, then, which have really to be considered. Of the Zoroastrian and Indian traditions it is difficult to say anything, because we cannot discuss them on the same basis as the other traditions, of which we really know the antiquity. Again, they are full of decidedly mythological and philosophical matter, whereas the strong point in the Chaldean and Hebraic traditions is that they are essentially the work of men who were students of nature. To say the least of it, the more one studies the account of Genesis and the Chaldean account, the more clearly does one see how the men who wrote them must have studied nature.* The confusion of darkness is the beginning of all things; there is the necessity for light for the existence of all nature. These things stand out distinctly from the Indian, Greek, and Persian traditions on the very point which the author of the paper has so well emphasised, namely, their simplicity. The paper is one which I am glad to have had the opportunity of seeing, because it has opened up a rich ground. The subject it treats with, is one of great importance, and it is one on which a great deal of light is at the present moment flowing in. It has been dealt with by two of our greatest minds, and from almost all points of view the first chapters of Genesis are now being discussed in every part of the world. There are articles on the subject in the American theological reviews, and, generally, it is under discussion at the present moment in such a way, and aided by such an armoury of facts and critical material, as it was impossible to bring to bear upon it some years ago when the *Vestiges of Creation* and books of that character were written. This paper is one which shows a large amount of reading; but I cannot help saying that the matter might be much more largely developed, and the coincidences between the Hebrew and Chaldean accounts, and even the Phœnician, much more fully brought out than has yet been done. There is one other point which I ought here to mention. It is very remarkable that in the Egyptian accounts, of which there are a few extracts here, we get no trace of the old traditions of the Creation or the Deluge. It is curious that the African races, almost without exception, are void of these traditions; and it is still more remarkable that where these traditions are strongest and clearest and most simple, it is the Semitic family in whose hands was placed the duty of handing down the REVELATION that finds its purest utterance in the earliest chapters of Genesis. There is one point in the paper to which I should like to refer, and that is where the author alludes to its being premature to speak of these Tablets as a record of the six days' Creation. I think it is, for we have only pieces of the 1st, 5th, and 6th Tablets; but there is an indication on those Tablets that there was a division into periods, and as the last fragment seems to point to the creation of man, it is just possible that the same division of time as that given in Genesis may have existed. There are one or two matters on which, although they are not mentioned in the paper, I may, perhaps, be allowed to speak. I allude to what is found on the 5th Tablet, for it is on this that the whole question of the value of Tablets and their dates turns. The 5th Tablet is remarkable as showing the careful study of nature the writers of that Tablet must have made, and how they had watched even the phases of the moon, the divisions of time, and the seasons. Just as we are told in Genesis the lights were fixed for the measurement of time and the seasons, so, in the Tablets, we are told that the moon and stars were fixed for the same purpose. The first chapter of Genesis embodies a careful *résumé* of the laws of nature; but it does not attempt to do what some people have tried,—it does not try to make it a sort of scientific treatise. There is no need for anything of the sort. Genesis does not profess to teach geology or natural history. It shows how, step by step, the various phenomena of nature were created by the hand of the Almighty; but it does not attempt to arrange them according to geological strata; and any endeavour to prove that it does is simply a stretch of language, and an ill-judged effort to infuse into the simple and accurate account there given a meaning it is not intended to convey. That, at any rate, is the position I have always taken with regard to the first chapter of Genesis. Another remarkable point in regard to these Creation Tablets which may be brought out by one who has studied them, is found in the 1st Tablet:—"The Great Gods were then made." This does not convey the full sense of the word used there, *ibbanū*, "were made." The expression thus used is the reflexive form of the verb, and gives the idea of self-creation,—the Great Gods made themselves. There is another line,—"When none of the Gods had come forth." The expression used is, "Had caused them(selves) to come forth,"—again in the reflexive sense, as if there were the idea of God in creation conveyed by the language of the Tablets. Those who have studied the Tablets as presented in Schräder's book, which, I think, gives the best translations, will see, especially if he has a fair knowledge of Hebrew, the great care with which those Tablets were drawn up, evidently as though they were intended to be canonical documents. Every word seems to have been carefully weighed, almost as if the documents had been drawn up like a *credo*, their whole style showing the same care as would have been exercised had it been meant that they should be used as standard documents of religion. The documents—certainly in the form in which we have them—were written in the time of Assur-bani-pal, but there is a little fact, as coming from a little Tablet, which goes strikingly to prove that they were much older than that period. Among the Tablets that were brought over, I think with the last collection sent by Mr. Rassam, was a small fragment, which is a duplicate of one of the Creation Tablets, bearing upon it the date of the reign of Nabonidus. That Tablet is the same, word for word, as the Assyrian Tablet, though it is not copied from the Assyrian account, but is taken from one in the library of the Temple of Nebo. We know that the majority of the Tablets in the Assyrian libraries were copied from the Babylonian Tablets. We know that those libraries were not destroyed, as was imagined at one time, by the Assyrians; but that the Tablets were preserved, and that duplicates of the Tablets in the Assyrian library at Nineveh are also to be found in the library at Babylon. Another Tablet, which was discovered about two years ago, is one belonging to the Creation series. It contains an account of the war between Marduk and the Demon of Darkness. As I said at the time I first examined that Tablet, when Mr. Budge, who discovered it, allowed me to look at his copy, it is simply a myth founded on the first fight between light and darkness. It is, in reality, a most poetic elaboration of the phrase "Let there be light." The first work of Creation is the destruction of darkness, which brooded and coiled round the earth, as the serpent is said to have coiled round the cosmic egg, so that the darkness which for centuries had shrouded the earth was destroyed by the first bright ray of light. This idea had grown up and expanded so poetically in the minds of the Babylonian priests, that it resulted in the very beautiful legend of the destruction of the Demon of Darkness, or of Evil, by the powers of light. This, as I have said, was nothing but an elaboration or expansion of the simple idea we have in the words of Genesis,—"Let there be light." The conception of the destruction of darkness had grown out of that beautiful poetic statement, and it is this that has come down to us as one of the Creation fragments. There are many other questions which might be gone into in discussing these points; but I should occupy too much time were I to go into them now. The paper read this evening is one which opens up another very important question. I have been rather astounded at finding such a paper here, because about ten years ago I read a paper of my own, at a meeting of this Society, dealing with these Creation legends. On that occasion I put forward many of the theories that appear in the production before us, and I remember that they were not so well received as they appear to be at the present time. I am glad to find that ten years of study on the subject of Assyriology, and matters appertaining to Babylonian research, have enabled the ideas, of which I am speaking so freely this evening, to be accepted as well as they have been. You may depend upon it that there is nothing to fear from these Assyrian inscriptions, and that so long as you study them carefully, and are content to say "I do not know," instead of jumping to conclusions, as I consider M. Lenormant has, putting forward hasty deductions which have done harm, — so long, I say, as you are able to examine these things honestly and fairly, placing them side by side with the Biblical narrative, you will find there is very little contradiction; and that often where you think contradiction exists, in a few years, by means of other inscriptions, the apparent contradiction is gradually smoothed away. There is one point which I think ought to be remembered. We must try and get over an idea that is prevalent in many minds. I allude to the idea that the first chapter of Genesis, and the traditions attaching to that account, were written only at the time, some say of Moses, and others that of David. They have been preserved for centuries, and handed down from one generation to another. The traditions which I believe Abraham brought out of Chaldea, and which were then handed down from father to son, have, probably owing to the peculiar life the Hebrew people led, at one time in the desert, and at others in places where they were least subject to Egyptian influence, been preserved in a condition of purity far exceeding that of the other versions found in Phœnicia and Chaldea, which have come from the some primeval stock.

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* For the purposes of argument Mr. Boscawen has dealt with the subject on the lowest ground, viz., that even if one regards the account in Genesis as a tradition, one must see its great superiority over what are acknowledged by all to be simply traditions.—[ED.]

Rev. F. B. PROCTOR, M.A.—I wish to ask a question of Mr. Boscawen. He has identified "Ruach" with the word Wisdom.

Mr. W. ST. C. BOSCAWEN.—Yes.

Rev. F. B. PROCTOR, M.A.—You are, I presume, aware that that is not the usual acceptation ?

Mr. W. ST. C. BOSCAWEN.—I know that the word is rendered differently.

Rev. F. B. PROCTOR, M.A.—Wisdom is identified rather with the expression "God spake," than with the Spirit ; and that I think accords with the idea of the cosmic egg, which is only another way of reading that first chapter of Genesis, in which we are told that the Spirit of God brooded over chaos and hatched, as it were, the life which followed. Is it not the case that the Wisdom spoken of in Proverbs, and all through the Bible, is identified with the Word, and with the incarnate God Himself ? There is another question which occurs to me in reference to what appears on page 238. We clergymen, I suppose, look at these things a little differently from others ; but we are open to conviction. On the same page of the paper, I think the author has fallen into a great mistake. Speaking of immortality, he says, —"The Jews in Egypt must have been familiar with the conception. The trial scene of the departed soul before Osiris met their eyes on a thousand tombs, and was wrapped up in a thousand papyrus rolls, but accompanied everywhere by grotesque, repulsive, and ever hideous symbols. No wonder that Moses was silent about a doctrine thus saturated, to his mind, with polytheistic errors." Now, we have always understood from the Pentateuch, and from Genesis in particular, that the idea of immortality, or a future life, was kept in the background. It was not the plan of Moses to develope the idea of immortality. The doctrine existed but as a germ, which went on increasing until we come to our Lord's time. I merely call attention to this as a slip, and do not wish to be too critical. There is another point I would refer to. On page 243, speaking of Brahman, the author says,—"As milk curdles, as water becomes snow and ice, Brahman congeals into matter." When some one asked, "What is matter ?" the answer, given in French, was, "L'esprit congelé." It is singular to see the same thing thus stated with reference to Brahman.

Mr. W. ST. C. BOSCAWEN.—It is curious to find, in one of the books, the idea of future life in the under world, or the grave, or sheol, most fully developed—that book being generally admitted to be the oldest of all, the book of Job.

Rev. F. B. PROCTOR, M.A.—But that is disputed.

Mr. W. ST. C. BOSCAWEN.—I have shown, in a book I have published, that the words are, in many cases, word for word with those we find in the Assyrian inscriptions.

Rev. F. B. PROCTOR, M.A.—I only spoke of the idea as an undeveloped one.

Mr. W. St. C. Boscawen.—As to the reference made to wisdom, I have said that I am no theologian; but what I meant when speaking of the subject was to call attention to the peculiar form which "*absu*" takes in the Assyrian inscriptions. It is remarkable that we find "*absu*," or wisdom, filling people with knowledge, just as we have the spirit of the Lord filling Balaam and the messengers of Saul. Perhaps the comparison I have made does not hold good on theological grounds, but it seems to me to express the nearest approach we can get. The word occurs in the third line of the Tablet, and is translated "limitless abyss" by M. Lenormant. I do not argue the matter from a theological point of view.

The meeting was then adjourned.

ORDINARY MEETING, February 15, 1886.

D. Howard, Esq., V.P.C.S., in the Chair.

The Minutes of the last Meeting were read, and the following Elections were announced :—

Associates :—Major-General H. Aylmer, Falmouth ; Rev. S. S. Allnutt, M.A., Dehli ; Rev. T. Dunn, London ; Rev. A. Elwin, China ; G. H. O'Donel, Esq., India ; Rev. F. B. Proctor, M.A., London ; Mrs. H. V. Reed, United States ; Rev. J. Whiteley, Bradford.

Also the presentation to the library of the following :—

Essays by the late Lord O'Neill.	*From the Dowager Lady O'Neill.*
Sermons by the same.	„ „ „

The following paper was then read by Mr. H. Cadman Jones, M.A., the author's university duties preventing his attendance.

FINAL CAUSE. By Professor R. L. Dabney, D.D., LL.D. (Texas University).

Of the four "causes," or necessary conditions of every new effect, taught by Aristotelians, the last was the "Final Cause," τὸ τέλος, or τὸ οὗ ἕνεκα ; "that for the sake of which" this effect was produced. This result, for the sake of which the effect has been produced, is termed "final," because it is of the nature of a designed end; and "cause," in that it has obviously influenced the form or shape given to the result, and the selection of materials and physical causes employed. Final cause thus always involves a judgment adapting means to an end, and implies the agency of some rational Agent.

2. The question: Do any of the structures of Nature evince final cause? is the same with the question: Is the "teleological argument" valid to prove the being of a personal and rational Creator? The essence of that argument is to infer that, wherever Nature presents us with structures, and especially organs adapted to natural ends, there has been contrivance, and also choice of the physical means so adapted. But contrivance and choice are functions of thought and will, such as are performed only by some rational person. And so,

as material Nature is not intelligent or free, such adapted structures as man did not produce must be the work of a supernatural Person. This reasoning has satisfied every sound mind, Pagan and Christian, from Job to Newton. Yet it is now boldly assailed by evolutionists.

3. Some attempt to borrow an objection which Descartes very inconsistently for him, suggested: That "he deems he cannot, without temerity, attempt to investigate God's ends" (*Meditations*, iv. 20). "We ought not to arrogate to ourselves so much as to suppose that we can be sharers of God's counsels" (*Prin. Phil.* i. 28). The argument is, that if there is an intelligent First Cause, He must be of infinite intelligence; whence it is presumptuous in a finite mind to say that, in given effects, He was prompted by such or such designs. We are out of our depth. But the reply is: That this objection misstates the point of our doctrine. We do not presume to say, in advance of the practical disclosure of God's purposes in a given work, what they are, or ought to be; or that we know all of them exactly; but only: That He is prompted in His constructions by some rational purpose. And this is not presumptuous, but profoundly reverential; for it is but concluding that God is too wise to have motiveless volitions! Again, when we see certain structures obviously adapted to certain functions, and regularly performing them, it is not an arrogant, but a supremely reverential inference, that those functions were among God's purposed ends in producing those structures. For this is but concluding that the thing we see Him do is a thing He meant to do!

4. Next, we hear many quoting Lord Bacon against the study of final causes. They would fain represent him as teaching that the assertion of final causes is incompatible with, and exclusive of, the establishment of efficient, physical causes. But, as these latter are the real, proximate producers of all *phenomena*, it is by the study of them men gain all their mastery over Nature, and make all true advances in science. Whence, they argue, all study or assertion of final causes is inimical to true science. Thus, they quote Bacon, as, for instance, in the *Nov. Organum* (lib. i. Apothegm 48): "Yet, the human intellect, not knowing where to pause, still seeks for causes more known. Then, tending after the remoter, it recoils from the nearer; to wit, to final causes, which are plainly rather from the nature of man, than of the Universe; and from this source they have corrupted philosophy in wondrous ways."

5. Now, Lord Bacon's own words prove that he does not condemn, but highly esteems the inquiry after final causes in

its proper place, the higher philosophy and natural theology. He is himself a pronounced Theist, and infers his confident belief in God from the teleological argument. The whole extent of his caution is, that when the matter in hand is physical, and the problem is to discover the true, invariable, physical efficient of a class of *phenomena,* we confuse ourselves by mixing the question of final cause. Thus, in the *Advancement of Learning,* he himself divides true Science into physical and metaphysical; the former teaching the physical efficients of effects; the latter, under two divisions, teaching: 1. The Doctrine of Forms. 2. The Doctrine of Final Causes. And this third, culminating in theology, he deems the splendid apex of the pyramid of human knowledge.

6. In the second book of his work on the *Advancement of Learning,* he says:—"The second part of Metaphysics is the inquiry into final causes; which I am moved to report not as omitted, but as misplaced." (He then gives instances of propositions about final causes improperly thrust into physical inquiries.) "Not because those final causes are not true, and worthy to be inquired, being kept within their own province; but because these excursions into the limits of physical causes have bred a vastness and solitude in that track. For, otherwise, keeping their precincts and borders, men are extremely deceived if they think there is an enmity or repugnancy between them."

7. In fact, the two imply each other. If there is a God pursuing His purposed ends, or final causes, He will, of course, pursue these through the efficient, physical causes. It is the very adaptation of these to be right means for bringing God's ends, under the conditions established by His providence, which discloses final causes. It is the physical cause,—gravity,—which adapts the clock-weight to move the wheels and hands of the clock. Shall we, therefore, say it is contradictory to ascribe to the clock, as its final cause, the function of indicating time? Does the fact that the physical cause,—gravity,—produces the motions weaken the inference we draw from the complicated adjustments, that this machine had an intelligent clockmaker? No; the strength of that inference is in this very fact, that here, the blind force of gravity is caused to realise an end so unlike its usual physical effects in the fall of hail-stones and rain-drops, of leaves and decayed branches.

8. The evolutionist says, then, that since the physical cause is efficient of the effect, this is enough to account for all actual results, without assigning any "final cause." The *lens,* for instance, has physical power to refract light. If we find a

natural *lens* in a human eye, we have a sufficient cause to account for the formation of the *spectrum*, the function from which theists infer their final cause; and the logical mind has no need to resort to a theory of "contrivance" and "final cause" for this organ. Function is not the determining cause, but only the physical result of the existence of the organ. Birds did not get wings in order to fly; but they simply fly because they have wings. As to the complex structures called organs, the evolutionist thinks his theory accounts for their existence, without any rational agent pursuing purposed ends. That just this configuration of a universe, with all its complicated structures, is physically possible (*i.e.* possible as the result of physical causes), is sufficiently proved by the fact that it exists as it is. For theists themselves admit that it is the physical causes which contain the efficient causation of it. These are, as interpreted by evolutionists, slight differentiations from the parent types, in natural reproductions (variations which may be either slightly hurtful to the progeny, slightly beneficial, or neutral): the plastic action of environment in developing rudimental organs, and the survival of the fittest. Allow, now, a time sufficiently vast for these causes to have exhibited, countless numbers of times, all possible variations and developments; under the rule of the survival of the fittest; the actual configurations we see may have become permanent, while all the agencies bringing them to pass acted unintelligently and fortuitously.

9. Such, as members of this Institute well know, is the latest position of anti-theistic science, so called. The whole plausibility is involved in a confusion of the notions of fortuity and causation. This we now proceed very simply to unravel. The universal, necessary, and intuitive judgment, that every effect must have an adequate cause, ensures every man's thinking that each event in a series of *phenomena* must have such a cause preceding it, however we may fail in detecting it. In this sense, we cannot believe that any event is fortuitous. But the concurrence or coincidence of two such events, each in its place in its own series caused, may be thought by us as uncaused, the one event by the other or its series, and thus the concurrence, not either event, may be thought as truly fortuitous. Thus, the coincidence of a comet's nearest approach to our planet, with a disastrous conflagration in a capital city, may be believed by us to be, so far as the concurrence in time is concerned, entirely by chance. We no longer believe that comets have any power to "shake war, pestilence or fire from their horrent hair," on our earth. Yet we have no doubt that a physical cause propels that comet in its orbit

every time it approaches the earth; or that some adequate local cause wrought that conflagration in the metropolis. But now, suppose this coincidence of the comet's *perigee* and the conflagration should recur a number of times? The reason would then see, in the frequency and regularity of that recurrence, a *new phenomenon,* additional to the individual ones of comet and fire; a new effect as much requiring its own adequate cause, as each of these demands its physical cause. This regular recurrence of the coincidence is now an additional fact. It cannot be accounted for by fortuity. Its regularity forbids that supposition. The physical cause of each event, comet's approach and conflagration, is adequate, each to the production of its own effect. But the new effect to be accounted for is the concurrence. This is regular; but we know that the sure attribute of the results of blind chance or fortuity is uncertainty, irregularity, confusion. The very first recurrence of such a coincidence begets a faint, probable expectation of a new, connecting cause. All logicians agree that this probability mounts up, as the instances of regular concurrence are multiplied, in a geometric ratio; and when the instances become numerous, the expectation of an additional coördinating cause becomes the highest practical certainty. It becomes rationally impossible to believe that these frequent and regular concurrences of the effects came from the blind, fortuitous coincidence of the physical causes, acting, each, separately from the other.

10. The real case, then, is this. Each physical cause, as such, is only efficient of the immediate, blind result next to it. Grant it the conditions, and it can do this one thing always, and always as blindly as the first time. Gravity will cause the mass thrown into the air to fall back to the earth, to fall anywhere, or on anything, gravity neither knowing nor caring where. But here are several batteries of cannon set in array to break down an enemy's wall. What we observe as fact is, that the guns throw solid shot convergently at every discharge, upon a single fixed spot in the opposing curtain, with the evident design to concentrate their force and break down one chasm in that wall. Now, it is a mere mockery to say that, given the cannon and the balls, the explosive force of gunpowder, and gravity, the fall of these shots is accounted for. These physical causes would account for their random fall, anywhere, uselessly, or as probably upon the heads of the gunners' friends. The thing to be accounted for is their regular convergence. This is an additional fact: the blind physical causes do not and cannot account for it,—it discloses design.

11. The human eye, for instance, is composed of atoms of oxygen, hydrogen, carbon, nitrogen, with a few others of

phosphorus and lime. Chemical affinity may arrange an ounce or two of these atoms into a compound, which may be, so far as any determination of that blind cause goes, of any shape or amorphous, fluid or solid, useful, useless or hurtful to sensitive beings. But here are countless millions of reptiles, birds, quadrupeds and men, creatures designed to live in the light and air, of whom the men number twelve hundred millions at least, in each individual of whom there is a pair of eyes except in the imperfect births. Numerous and exceedingly delicate adjustments were necessary in each separate eye, to effectuate the end of an eye—vision. The pupil must open on the exterior front, and not somewhere within the socket; the interior of the ball must be a *camera obscura.* There must be refracting, transparent bodies, to bend the rays of light; achromatic refraction must be produced; focal distances must be adjusted aright; there must be a sensitive sheet of nerve to receive the *spectrum;* the sensation of this image must be conveyed by the optic chords to the *sensorium;* the animal's perceptive faculty must be coördinated as a cognitive power to this sensorial feeling; the brow and lids must be contrived to protect the wondrous organ. Here, already, is a number of coincidences, and the failure of one would prevent the end —vision. Let the probability that the unintelligent cause, chemical affinity, would, in its blindness, hit upon one of these requisites of a seeing eye, be expressed by any fraction, we care not how large. Then, according to the established law of logic, the probability that the same cause will produce a coincidence of two requisites is found by multiplying together the two fractions representing the two separate probabilities. Thus, also, the joint concurrence of a third has a probability expressed by the very small fraction produced by multiplying together the three denominators. Before we have done with the coördinations of a single eye, we thus have a probability, almost infinitely great, against its production by physical law alone. But in each head are two eyes, concurring in single vision, which doubles the almost infinite improbability. It is multiplied again by all the millions of the human and animal races. But this is not all. To say nothing of the coincidence of means in inorganic and vegetable nature, there are in animals many other organs besides eyes, which, if not as complicated, yet exhibit their distinct coördinations. These must multiply the improbability that fortuity produced all the former results! Thus the power of numbers and the capacity of human conceptions are exhausted before we approach the absurdity of this theory of the production of ends in nature without final cause.

12. We look, then, at these combinations of means to results or functions, which unintelligent physical causes could not account for; and we perceive this farther fact. Adjustments or coördinations are regularly made, in order to certain ends. The nature of the end proposed has determined the nature of the physical means selected, and the combination thereof. Thus: as the ship is evidently designed and purposed for sailing, so is the ear for hearing, and the eye for seeing. The function of sailing has determined the materials and structure of the ship: the function of hearing those of the ear: the function of seeing those of the eye. But the ship-building must be before the sailing: the ear and eye must exist before the hearing and seeing. The facts which we have, then, are these: Here are ends, coming after their means, which yet have acted causatively on their own precedent means! But every physical cause precedes its own effect. No physical cause can act until it exists. Here, however, are ends, which exercise the influence of causes, and yet, against all physical nature, are causes before they have existence, and act backwards up the stream of time! Here is the function of sailing, which has effectively caused a given structure in a ship-yard, before this function was.

13. To solve this paradox, there is only one way possible for the human mind. There must have been *prescience of that future function.* It is impossible that it can have acted causally, as we see it act in fact, except as it is foreseen. But foresight is cognition; it is a function of intelligence; it cannot be less. A mind has been at work, pre-conceiving that function and the things requisite to it, choosing the appropriate means, purposing the effective coördinations therefor, and thus shaping the work of the physical causes. *This is "final cause."*

14. There is one sphere, within which the mind has intuitive and absolute knowledge of the working of final causes, as every atheist admits. This is the sphere of one's own consciousness and will. The man knows that he himself pursues final causes, when he conceives and elects future ends, selects means, and adapts them to his own purposed results. But is he not equally certain that his fellow-man also pursues final causes? Doubtless. It is instructive to inquire how he comes to that certainty as to his fellow's soul. He has no actual vision of that other's subjective states! Men have no windows in their breasts into which their neighbours peep, and actually see the machinery of mind and will moving. But this man knows that his fellow is pursuing final causes generically like those he consciously pursues himself; because

he observes the other's outward acts, and infers final causes in the other's mind, from the great mental law of "like causes, like effects," by an induction guided by the perfect, visible analogy.

15. But when we observe, in nature, these visible actions exactly analogous to combinations seen in our fellow-man when he pursues his final causes: why do not the same analogy and induction justify us in ascribing the same solution; that there are final causes in nature also? Why is not the one induction as valid as the other? There is no difference. It is vain to object, that whereas we see in our fellow a rational person; we see in nature no personality, but only sets of material bodies and natural causations. For it is not true that we *see* in our neighbour a rational person, competent to deal with final causes. His soul is his personality! And this is no more directly visible to us than God is visible in nature. What we see in our neighbour is a series of bodily actions executed by members and limbs, as material as the physical organs of animals: it is only by an induction from a valid analogy between his acts and our own, that we learn the rational personality behind his material actions. The analogy is no weaker, which shows us God's personality behind the final causes of nature. The question returns: Why is it not as valid?

16. Is a different objection raised: That man's pursuit of his final causes is personal and consciously extra-natural, exercised by personal faculties acting from without upon material nature; while the powers which operate everything in nature are immanent in nature? The replies are two: First, in the sense of this discussion, human nature is not extra-natural, but is one of the ordinary spheres of nature, and is connected with the lower spheres by natural laws as regular as any. When the personal will of a man pursues a final cause, he does it through means purely natural: there is, indeed, a supra-material power at work, coördinating mind; but nothing extra-natural or supra-natural appears. Why, then, may we not press an analogy so purely natural through all the spheres of nature? Second: our opponents [Evolutionists, or Materialists, or Agnostics] refute themselves fatally; for they are the very men who insist on obliterating even that reasonable distinction which we make between the material and mental spheres. They plead for *monism* in some form: they deny that mind and matter are substantively distinct; they insist on including them in one theory of substance and force. They have, then, utterly destroyed their own premise, by denying the very distinction between personal mind and

nature, on which alone their objection rests. On their ground, our analogical induction for final cause in nature is a perfect proof. They admit that our minds consciously pursue final causes. But mind and physical nature, say they, are manifestations of the same substance and force. Hence, when we see the parallel coördinations of physical causes to future ends in nature, just like those we consciously employ; there is no other inference possible, but that nature, like us, pursues final causes.

17. The exception of Hume and his followers of our generation is already virtually answered. He cavilled that the inference from our conscious employment of final causes to the same fact in nature is unsound, because of the difference between a person and a natural agency. Mr. Mill has echoed the cavil, while completely refuting it in another place.* Mr. H. Spencer has reproduced it in the charge that the inference labours under the vice of *anthropomorphism;* that it leaps from the conscious experience of our limited minds to an imaginary acting of an infinite mind (if there is any divine mind), about which we can certainly know nothing as to its laws of acting; and it unwarrantably concludes that this absolute Being chooses and thinks as we finite, dependent beings do. The *argumentum ad hominem* just stated would be a sufficient reply. Or we might urge that, if God has made the human mind "after His image, in His likeness," this would effectually guarantee all our legitimately rational processes of thought against vice from *anthropomorphism.* For, in thinking according to the natural laws of our minds, we would be thinking precisely as God bids us think. And, should Mr. Spencer say that we must not "beg the question" by assuming this theistic account of man's origin, we might at least retort, that neither should he beg the question by denying it. We might also urge, that the difference between the normal acting of a finite mind, and of an infinite one, can only be a difference of degree, not of essence; that the thinking of the finite, when done according to its laws of thought, must be good as far as it goes; only, the divine thinking, while just like it within the narrow limits, goes greatly farther. Sir Isaac Newton knew vastly more mathematics than the school-child; yet, when the school-child did its little "sum" in simple addition, "according to rule," Newton would have pronounced it right; nor would he have done that "sum" in any other than the child's method! Once more; the unreasonableness of the demand, that we

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* *Theism*, part i., "Marks of Design in Nature."

shall reject any conception of the divine working, though reached by normal (human) inference, merely because it may be anthropomorphic, appears thus. It would equally forbid us to think or learn at all, either concerning God, or any other Being or concept different from man: for, if we are not allowed to think in the forms of thought natural and normal for us, we are forbidden to think at all. All man's cognition must be anthropomorphic, or nothing.

18. But the complete answer to these exceptions is in the facts already insisted on: that, in reasoning from "finality" in nature, to "intentionality," we are but obeying an inevitable necessity; we are not consulting any peculiarity of human laws of thought. In the operations of Nature, just as much as in our own consciousness, we actually see ends which follow after their physical efficients, exerting a causal influence backward, before they come into existence, on the collocations of their own physical means, which precede. There is no way possible in physical nature by which a cause can act before it is. The law of physical causation is absolute; a cause must have existed in order to operate. Hence we are driven out of physical nature to find the explanation of this thing,—driven, not by some merely human law of thought, but by an absolute necessity of thought. The final cause which acted before it existed, must have pre-existed in forethought. Forethought is a function of mind. Therefore, there must be a Mind behind nature, older and greater than all the contrivances of nature. A great amount of thinking has been done in the finalities of nature. Who did that thinking? Not nature. Then God. The only alternative hypothesis is that of chance. We have seen that hypothesis fall into utter ruin and disgrace before the facts.

19. Were all the claims of the Evolutionist granted, this would not extinguish the teleological argument, but only remove its *data* back in time, and simplify them in number. For then, the facts we should have would be these: a few, or possibly one primordial form of animated matter, slowly, but regularly, producing all the orderly wonders of Life, up to man, through the sure action of the simple laws of slight variation, influence of environment, survival of the fittest. Here, again, are wonderful adaptations to ends! And chance would equally be excluded by the numbers, the regularity, the beneficence of the immense results. The problem would recur:—Who adjusted those few but ancient elements so as to evolve all this? Teleology is as apparent as ever. We may even urge, that the distance, the multitude, the complex regularity

of the later effects which we now witness, illustrate the greatness of the thinking but the more. The justice of this point may appear from the fact, that there are Theistic evolutionists who make the very claim just urged. They advance the evolutionist theory, and in the same breath they stoutly assert that in doing so they have not weakened, but improved the grounds of the teleological argument. However, we may judge their concession of this improved theory of evolution to be unwise and weak; this other assertion is solid, that they are no whit inferior in knowledge or logic to their atheistic comrades and co-labourers, who pronounce the teleological argument dead.

20. The attempt to account for structures adapted to functions by evolution, has no pretence, even, of applying, except in organised beings which perpetually reproduce their kinds. For it is the claim of slight variations in generation, and of the fuller development of nascent new organs by the reaction of environment, which form the "working parts" of the theory. But clear instances of finality are not confined to these vegetable and living beings. There are wondrous adaptations in the chemical facts of inorganic nature, in the mechanism of the heavenly bodies, in the facts of meteorology. Here, then, their speculation breaks down hopelessly. Have suns and stars, for instance, attained to their present exquisite adjustments of relation, and perfection of being, by the blind experiments of countless reproductions? Then, the fossil-suns, unfitted to survive, ought to lie about us as thick as fossil polypi and mollusks!

21. The claim, that a blind *conatus* towards higher action felt in the animal may have assisted the plastic influence of environment from without in developing rudimental organs, cannot assist the evolutionists. They differ among themselves as to the mode of such influence; they contradict each other. Natural history fatally discredits the claim by saying, that the organ must be possessed by the species of animals, before any of them could feel any *conatus* towards its use. Can seeing be before eyes, even in conception? No. How, then, could eyeless animals feel any *conatus* to see? Let no one be deluded by the statement that a blind boy among us may feel a yearning to see. He is a defective exception in a seeing species, who do crave to see because they already have eyes; and who suggest to their blind fellow the share in this desire by the other faculty of speech. It still remains true, that the species must have eyes beforehand, in order that individuals

may experience a *conatus* for seeing. But the case to be accounted for would be the beginning of such *conatus* in some individual of a species, none of which had the organ for the function, and in which, consequently, none had even the idea of the function or its pleasures as the objective of such desire. If they resort to the assertion that this *conatus* towards a function may be instinctive and unintelligent, the fatal answers are:—That their own sciences of zoology and physiology assure us that instincts are not found in cases where the organs for their exercise do not exist: And that an instinctive *conatus*, being blind and fortuitous, would never produce results of such regularity and completeness, and those, exactly alike in each of the multitudes of a species.

22. But the most utter collapse of the attempt to explain the finalities of Nature by the laws of a supposed evolution, occurs when we approach those classes of organs, which complete their development while the influences of environment and function are entirely excluded; and these are exceedingly numerous. The fowl in the shell has already developed wings to fly with, in a marble case which excluded every atom of air, the *medium* for flying. So, this animal has perfected a pair of lungs for breathing, where there has never been any air to inhale. It has matured a pair of perfect eyes to see with, in a prison where there has never entered a ray of light. It has an *apparatus* of nutrition in complete working order, including the interadjustments of beak, tongue, swallow, craw, gizzard, digestive stomach, and intestine, although hitherto its only nutrition has been from the egg which enclosed it; and this has been introduced into its circulation in a different manner. This instance of the fowl has been stated in detail, that it may suggest to the hearer a multitude of like ones. The argument is, that physical causes can only act when in juxtaposition, both as to time and place, with the bodies which receive their efficiency. But here, environment and function were wholly absent until the results,—wings, eyes, ears, lungs, alimentary canal, were completed. Therefore, they had no causal connection whatever as physical causes. Their influence could only have been as final causes.

23. Perhaps the deepest mysteries and wonders of Nature are those presented in the functions of reproduction. And to these Nature attaches her greatest importance, as she shows by many signs, seeing the very existence of the *genera* and *species* depend on this. The organs of reproduction present instances most fatal to our opponents, in all those cases where the male organs are in one individual, and the female in a

different one of the same species; and where their development is complete before they either can or do react upon each other in any manner. These instances not only include the great majority of the animal species, but many kinds of plants and trees; or, at least, different flowers of the same tree. The organs are exceedingly unlike each other, yet exactly adapted for future co-operation. This fitness is constituted not only by structure of masses, but by the most refined and minute molecular arrangements. If either of these delicate provisions is out of place, Nature's end is disappointed. Must not these organs be constructed for each other? Yet the reaction of environment had no influence on their development; for all interaction has been excluded until the maturity of the structures. Final cause is here too clear to admit of doubt when the cases are duly considered.

24. The argument will close with these general assertions. Our conclusion has in its favour the decided assent of the common sense of nearly all mankind, and of nearly all schools of philosophy. All common men of good sense have believed they saw, in the adjustments of the parts of nature to intended functions, final causes and the presence of a supernatural mind. The only exceptions have been savages like the African Bushmen, so degraded as to have attained to few processes of inferential thought on any subject. All speculative philosophers have been fully convinced of the same conclusion, from Job to Hamilton and Janet, except those who have displayed eccentricity in their philosophy, either by materialism, ultra-idealism, or pantheism. This *consensus* of both the unlearned and the learned will weigh much with the healthy and modest reason.

25. The postulate that each organ is designed for an appropriate function is the very pole-star of all inductive reasoning and experiment in the study of organized nature. At least, every naturalist proceeds on this maxim as his general principle; and if he meets instances which do not seem to conform to it, he at once discounts them as *lusus naturæ*, or reserves them for closer inquiry. When the botanist, the zoologist, the student of human physiology, detects a new organ, not described before in his science, he at once assumes that it has a function. To the ascertainment of this function he now directs all his observations and experiments; until he demonstrates what it is, he feels that the novelty he has discovered is unexplained; when he has ascertained the function, he deems that he has reduced the new discovery into its scientific place. Without the guidance of this postulate of adapted function for each organ, science would be paralysed, and its order would become

anarchy. The instances are so illustrious, from Harvey's inference by the valvular membranes in the arteries to a circulation of the blood, down to the last researches of zoology and botany, that citation is needless for the learned. But this postulate is precisely the doctrine of final cause.

26. Belief in final cause is the essential counterpart to, and immediate inference from, the belief in causation. But this is the very foundation of inductive logic. There is no physicist who does not concur with us in saying, that all induction from instances observed to laws of nature is grounded in the "uniformity of nature." But has this nature any stable uniformity? Is not her attribute variation and fickleness? The first aspect of her realm is mutation, boundless mutation. Or, if she is found to have, in another aspect, that stability of causation necessary to found all induction; how comes she, amidst her mutabilities, to have this uniformity? Her own attributes are endless change, *and blindness.* Her forces are absolutely unintelligent and unremembering. No one of them is able to know for itself whether it is conforming to any previous uniformity or not: no one is competent to remember any rule to which it ought to conform. Plainly, then, were material nature left to the control of physical laws alone, she must exhibit either a chaotic anarchy or the rigidity of a mechanical fate. Either condition, if dominant in nature, would equally unfit her to be the home of rational free agents, and the subject of inductive science. Let the hearer think and see. Nature is uniform, neither chaotic nor fatalistic, because she is directed by a Mind, because intelligence directs her unintelligent physical causes to preconceived, rational purposes. Her uniformities are but the expressions of these purposes, which are stable, because they are the volitions of an infinite, immutable Mind, "whose purposes shall stand, and who doeth all His good pleasure," because all His volitions are guided, from the first, by absolute knowledge and wisdom, perfect rectitude, and full benevolence. Nature is stable, only because the counsels of the God, who uses her for His ends, are stable.

None but theists can consistently use induction.

The CHAIRMAN (D. HOWARD, Esq., Vice-President Chemical Society).—We have to thank the author, and also the reader of this paper: we would gladly have welcomed Dr. Dabney among us, had he been able to leave his distant home. Having been a quarter of a century ago a very distinguished soldier, he has since added to that distinction the further claim upon our recognition which belongs to his position as a professor and deep thinker. It may seem strange that after all these years of discussion we should still have to go back to so elementary a matter as the causes which Aristotle classed as first causes. And yet there are few things which create so much discussion as the question of first cause. I once heard a distinguished lawyer ask a distinguished physician, in cross-examination, what was the cause of a man's illness, and the physician replied, "If you will tell me what you mean by 'cause,' I will answer the question." The lawyer, however, thought better of it, and the question was not answered; and we were consequently cheated out of a very important discussion. Doubtless, the barrister was astute enough to know that most men would have fallen into the trap he had laid, and, in describing the cause of the man's illness, have afforded a chance for a clever rejoinder. And so it is in the matter before us. We see men entirely ignoring the very ancient distinction between the different causes by confusing, under the common term "causes," all those which Aristotle, if not the first to draw attention to, was undoubtedly the first to classify. The more we pursue the question the more evident it is that, take what view we may of creation, whether we consider the present state of things to have been brought about by evolution, or by a mere single act of creation, we are just as much unable to escape from the argument of final cause in the one case as in the other. We are, in fact, unable to free our minds from the belief that there has been a distinct purpose in nature. It is, I believe, perfectly true that there is nothing in the belief in evolution to prevent a full and complete belief in a final power and creative cause, though I quite share the author's view of the very incomplete proof of the universality of evolution. Therefore, this question of final cause is by no means one which it is needless to discuss in these days. It is not one, I think, which has been so thoroughly thrashed out that there is no necessity to say any more upon it. There are, however, many here who I believe are well able to discuss the subject, and I hope they will give us the benefit of their thoughts upon it.

Mr. **Hastings C. Dent**, C.E., F.L.S.—In offering a few remarks on this subject, I would first of all say that there have been few papers read in this room to which I have listened with deeper interest; and I cannot but regard it as a most important contribution to the transactions of this Society. I propose to confine my remarks to a few criticisms, and I may say that there are many points in the paper which are so very clear and plain that I might almost call them axioms. I will draw attention to some half dozen of these, and the first to which I would refer relates to contrivance and choice. In section 2, the author says, "Wherever nature presents us with structures, and especially organs, adapted to natural ends, there has been contrivance, and also choice of the physical means so adapted. But contrivance and choice are functions of thought and will, such as are performed only by some rational persons." There is a very admirable illustration of this given in section 7. It is not the old idea of Paley about the watch, but rather an enlargement of that idea. The author says, "Here the blind force of gravity is caused to realise an end so unlike its usual physical effects in the fall of hail-stones and rain-drops, of leaves and decayed branches."

Then I come to axiom No. 2, which is to be found in section 8. The author says, "Function is not the determining cause, but only the physical result, of the existence of the organ. Birds did not get wings in order to fly; but they simply fly because they have wings." In the same way, we are told in paragraph 12, "Adjustments, or coördinations, are regularly made in order to certain ends;" and again, on the same page, "As the ship is evidently designed and purposed for sailing, so is the ear for hearing and the eye for seeing." Axiom No. 3 is given in section 9, where the author says, "We know that the sure attribute of the results of blind chance or fortuity, is uncertainty, irregularity, confusion;" and then we have axiom No. 4, a little further down, "It becomes rationally impossible to believe that these frequent and regular concurrences of the effects came from the blind, fortuitous coincidence of the physical causes, acting each separately from the other." Again, in the concluding part of section 17, we are told, "The difference between the normal acting of a finite mind and of an infinite one can only be a difference of degree, not of essence;" and then we have an analogy between the child's sums and those of Sir Isaac Newton. The fifth axiom is to be found at the end of paragraph 20, where the author confutes the theory of gradual evolution, or the doctrine of organisms obtaining perfection. Here the author gives us a splendid specimen of analytical reasoning, by citing the case of the sun and the stars, as to which he says, "Have suns and stars, for instance, attained to their present exquisite adjustments of relation and perfection of being by the blind experiments of countless reproductions? Then, the fossil suns, unfitted to survive, ought to lie about us as thick as fossil polypi and mollusks." There is one more axiom. It appears at the end of section 21:—"Their own sciences of zoology and physiology assure us that instincts are not found in cases where the organs for their exercise do not exist." May I be allowed, very humbly, to take exception to one item in section 22? I would venture to suggest that the argument there employed is weak, because it can be so easily controverted or answered by the evolutionists. The author says, "The most utter collapse of the attempts to explain the finalities of nature by the laws of a supposed evolution occurs when we approach those classes of organs which complete their development while the influences of environment and function are entirely excluded, and these are exceedingly numerous." He then refers to the fowl in the egg, as obtaining all its different organs necessary for the consumption of food, and the other needs of its being. Now, the evolutionist would say the fowl has merely inherited organs which are transmitted in the egg, and that, consequently, improvement or degeneration takes place after the animal has emerged from the egg-shell; every creature becoming more complex as the embryonic stage becomes more complicated. I do not know any creature that emerges from an egg without possessing some organs which it could not use while in the egg.

Rev. J. White, M.A.—May I take the liberty of offering a few remarks?

I think that, even if we admit all the evolutionists lay claim to, nevertheless, the teleological argument—that of a final cause for the existence of a rational and intelligent Creator—still remains unanswered. Evolution only accounts for the existence of the universe as a going machine, successive generations and variations being continually produced, and those generations being perpetuated in a manner beneficial to the creatures generated. I say, admitting all this as an explanation of the natural history of the universe, it still fails to exclude the teleological argument that the creatures which exist must have had the power of variation bestowed upon them. The creature is put into an environment which enables it to fulfil its functions and to bring about the results we witness; but all this implies design and purpose. It is what could not have occurred by chance or accident. Therefore, I think, material evolution does not militate against the belief we entertain, and that it is rational to entertain, as to the universe having been created by a God who had in view the perfection of the creatures by which it is inhabited. Evolution is to be regarded simply as one of the means by which this perfection and improvement have been brought about. In point of fact, the whole argument brought by the evolutionists against theism, seems to me very like the old illustration which, in accounting for the movement of a watch, went back to the spring and left the origin of that part of the machinery unexplained. These scientific theorists attempt to explain the existence of the universe without a Creator. They merely explain some of the processes, but fail altogether to touch their origin. It is a very remarkable thing how completely all the efforts of human science have failed to explain the origin of anything. Professor Max Müller has pointed out that all the attempts to explain the beginning of any language have utterly failed, and that there is not the slightest prospect of our obtaining such knowledge. He adds the remark, that the human intellect seems equally to fail in ascertaining the beginning of everything else. Therefore, I cannot think that the argument for evolution—although I admit evolution to be true as far as it accounts for a considerable number of steps in the process by which the creatures of the universe have been improved—does dispose of the teleological argument for a final cause, which the author of this paper has put before us in so admirable a manner.

Mr. Dent.—I should like to ask the last speaker whether he accounts for the appearance of man by evolution?

Rev. J. White.—I fear I am misunderstood. I only say, *supposing* the case of the evolutionist to be admitted, still it does not militate against, nor upset, the argument advanced in the paper.

Captain Francis Petrie (Hon. Sec.).—I have received the following communication from Surgeon-General C. A. Gordon, M.D., C.B., who is unavoidably prevented from being present.

Physical causes are the real proximate producers of all phenomena, sec. 4.

But the fact that they are so leaves the *ultimate cause* of those phenomena unexplained. For example, a match applied to gunpowder is the *immediate* cause of an explosion. But the *why* of this result is not explained by the occurrence of the explosion.

In physiology we know that each organ in the body performs its own definite function, and none other; also, that the several functions of organs are influenced by immaterial causes, as the emotions, &c. The fact we know; the why remains mysterious and unknown.

And so with particular causes of diseases, and action of drugs employed in treatment. The fact that definite effects follow the causes and the drugs is matter of actual experience. The why,—that is, the ultimate cause, in the one case as in the other,—is unrevealed.

Materialists assert that the phenomena of mind differ rather in degree than in kind from the phenomena of matter.

As a matter of fact, as little is known of the ultimate and occult properties of matter as there is known of the corresponding properties and faculties of mind. As expressed by Baxter—"Men who believe that dead matter can produce the effects of life and reason, are a hundred times more credulous than the most thorough-paced believer that ever existed."

The CHAIRMAN.—I wish the author had been here to have answered the friendly criticisms that have been made upon his paper. The point to which our attention has been called in regard to the answer of the evolutionist as to the formation and growth of the fowl in the egg, points to one of those curious things that have always passed my comprehension. It is assumed, undoubtedly for a very good reason, as we see that such is the case in nature, that the influence of heredity is an immense power; but what right have we, from the theory of pure natural selection, to assume anything of the kind? What right have we to assume that extraordinary persistency of type which is one of the most remarkable characteristics of all animals? Granting, for the sake of argument, that the peculiar transformations undergone by the embryo are a proof of the past history of the race, how can we, from the characteristics before us, form a conclusion as to the cause of this? But there is, of course, the other possible explanation, that those singular points which are appealed to as evidences of past history, are evidences, not of past history, but of the present position of the animal in the scheme of creation. This is as much in favour of the teleological point of view as it is in favour of the evolutionist. We have to thank the author for a most interesting paper.

Mr. D. M'LAREN.—In section 20 of the paper, the author speaks of the "wondrous adaptations in the chemical facts of inorganic nature, in the mechanism of the heavenly bodies, in the facts of meteorology," the slightest derangement of which would be fatal to the whole of the existing animal creation. Have the evolutionists attempted to notice or explain the adjustment of the masses, and forces, and distances of the heavenly bodies, as bearing on the argument in favour of teleology?

The CHAIRMAN.—As far as my reading goes, there is absolutely no modern argument in that direction. Undoubtedly, a few centuries back the alchemists gave us a most interesting history of the evolution of matter, and Paracelsus gave us certain speculations which are not looked upon with respect by modern scientists, but form a curious parody of some forms of modern thought.

Mr. G. Wise.—We find in the amœba that which corresponds to digestion, reproduction, and many of the functions of highly organised creatures like ourselves. I have been reading the introductory chapter to Foster's *Physiology*, and he there very beautifully shows that function precedes organisation, while a great German physiologist says that organs are simply the localisation of functions. I should like to know whether that is true or not?

The Chairman.—I wish some able physiologist were here to answer that question. For my part I think there is a good deal more of organisation in the amœba than the microscope will show. The differentiation of protoplasm is not to be measured by our powers of perception.

Mr. Wise.—It is said that they are jellies which are purely transparent. Can we in that case discern anything corresponding to organisation?

The Chairman.—If an apparently perfectly structureless piece of jelly performs functions, is not that a proof of organisation? *

The meeting was then adjourned.

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* Professor Lionel Beale, M.B., F.R.S., has kindly added a paper entitled "Notes on Structure and Structureless" (see page 276.)

REMARKS ON THE FOREGOING PAPER, BY THE REV. R. COLLINS, M.A.

I am much indebted to the honorary secretary for sending me a proof of Dr. Dabney's paper. It seems to me to be the most lucid and closely reasoned essay upon the subject that I have read.

It is instructive to observe how difficult it is for the evolutionists, though they discard the doctrine of final causes, to escape its practical dominancy over their reasonings and methods. In their search after modifications in the structure and functions of plants and animals, they are guided, equally with Harvey, by the idea of some *object* to be accomplished. The evolutionist writes as though Nature were always working up to *quasi*-final causes, though his theory is that no such direct cause exists, there being no intelligence to plan such intention. Nature accomplishes what would be accomplished by an intelligence having an intention in view, and on the same lines, only by a different method, namely, that wherever Nature by any adventitious accidental change hits upon that which will give a plant or animal a better chance in the struggle for existence, that better chance, to be followed by an infinite number of better chances (though why so followed we are not clearly told), establishes a new dynasty. The result in the new dynasty is such as would be obtained by intelligent design. Thus the language of design is continually used. For instance (to take up the first evolution article that comes to hand, Mr. Grant Allen's *Dispersion of Seeds*, in *Knowledge*, November, 1885), we read, "This very sedentary nature of the plant kind renders necessary all sorts of curious devices and plans, on the part of parents, to secure the proper start in life for their young seedlings. Or rather, to put it with stricter biological correctness, it gives an extra chance in the struggle for existence to all those accidental variations which happen to tell at all in the direction of better and more perfect dispersion." Now here the first intuition of the mind is towards "devices and plans," which then is immediately corrected by the superior "accident" theory. If "*accidental* variations, which *happen* to tell" in the direction of more perfect establishment, really produce what would be produced by a wise design, why should we refuse to believe the design, and choose the incomparably more difficult theory that "accidental variations" alone, "that happen to tell," have accomplished precisely what design would accomplish? What scientific advantage has the "accidental variations" theory over the final cause, which is, after all, practically admitted? How design has worked is another matter. Its method may be a perfectly legitimate subject of inquiry. It may have worked, perhaps, in part by variations in plants and animals. But when I speak of variations as "accidental," what do I really mean by "accidental"? Have I any proof that what seems to me to be accidental is not the result of some law or some intention? Professor Huxley seems to imply such a law or laws, and to deny anything actually accidental, when he says, "The whole world, living and not living, is the result of the mutual interaction, according to definite laws, of the forces possessed by the molecules of which the primitive nebulosity of the universe was composed." "If this be true," he goes on to say, "it is no less certain that the existing world lay, potentially, in the cosmic vapour, and that a sufficient intelligence could, from a knowledge of the properties of the molecules of that vapour, have predicted, say the fauna of Britain in 1869, with as much certainty as one can say what will happen to the vapour of the breath on a cold winter's day." These laws, then, govern what the evolutionists elsewhere call "accidents." Whether Mr. Herbert Spencer's "Energy" would eliminate "accident," strictly speaking, from the universe, or not, I cannot tell. But if so, it explodes the whole of Mr. Darwin's theory based on the "Survival of the fittest,"—at least, as it is used by the evolutionists. The only value of Mr. Spencer's "Energy," however, to many of us, is to cover an infinity of nebulous thought; for the idea conveyed by the word is simply "power for work," wherever found. And it is difficult to see what we can really establish upon the endeavour to unify in speech or theory the power for work of some kind or other that exists all over the universe. But if there be one such "Energy" behind its manifold ramifications, and if it be working out such harmonies and adaptations in Nature as would be worked out in obedience to final causes existing in some intelligent intention, is that "Energy" blindly-intelligent or *quasi*-intelligent? or how am I to understand it? Does it only prompt "accidental variations"? or does it work on definite lines? If the latter, where is the "accident"? And if the "Energy" develope final causes, how are we to eliminate from it the attribute of Mind?

Surely in eliminating the doctrine of final causes from the Universe, the evolutionists destroy the only real guide we can take for unravelling, so far as we can unravel, the functions of Nature. Moreover, they thus deny that which they themselves practically follow throughout their investigations.

"Accident" *versus* "Certainty," as a guide to the explanation of the harmonies and adaptations of the Universe, seems to be the greatest philosophical paradox conceivable.

NOTE ON STRUCTURE AND STRUCTURELESS.

By LIONEL S. BEALE, M.B., F.R.S.

Although jelly, as, for example, the jelly-like matter of which many of the Acalephæ are composed, or the so-called vitreous humour of the eye, appears perfectly transparent when examined by the unaided eye,—as transparent as glass,—both these tissues have a distinct *structure*, which may be revealed by microscopical examination, especially if the delicate tissue be tinted with certain colouring matters. But there is another kind of matter said to be "jelly-like," which is found throughout the living world, in which no structure whatever can be discerned, though it be submitted to examination by the very highest magnifying powers. And in many cases where, in relation with this matter, fibres or fibre-like structures, or granules, or globules have been discovered, these are in contact with, and in most cases formed from, the transparent and really structureless substance. And where, as in many instances, these bodies exhibit movements, the latter are communicated from the semi-fluid structureless material. In fact, it is this which moves and causes the movement in the fibres or granules. Now, it has been somewhat positively laid down that *structure* will ere long be discovered in this truly structureless living matter. "By higher magnifying powers than any we possess or can have any idea of, *structure* will be revealed." Those who agree in this contention, and they are many, do not attempt to show how the "structure" of their imagination will help them to explain the facts of life. They seem to be very certain that the mysterious phenomena of life are to be somehow explained by *structure*, although we have been for years discovering structure after structure, and we are just as far from anything like a reasonable explanation of life as ever—nay, we are farther than we were some years ago, because views have been forced upon us of late which are not supported by facts. We are told we *must* accept these views because the facts which are to prove them will certainly be discovered at some future time, and we are in the meanwhile to believe in the prophetic demonstrations vouchsafed to us by scientific prophets.

But, if we allow ourselves to be guided by actual facts and observations, and discard all prophetic assurances, we shall come to a very different conclusion. Look where we will in the living world among organisms, high and low, complex and simple, at the earliest period of existence, in the adult and in old age, in forms and types of such antiquity that, could we carry ourselves back for tens of thousands of years, we should find examples of the very same forms growing and multiplying as are now with us, and in creatures which have perhaps only exhibited their present characteristics during recent times. We come face to face with perfectly clear, transparent, colourless, semi-fluid or diffluent matter, so utterly devoid of any character to which the term "structure" can with fairness be applied that every part moves freely, not only from one place to another, or vibrates backwards and forwards, but every part seems to move into and out of every other part. If "structure" can be applied to this matter, the term may be applied to clear mucilage, or to syrup, or to water in the liquid state. We must then carefully distinguish the "structure" we mean when we apply the word to mobile liquids from that we indicate when we speak of the "structure" of a tissue, of a cell, or to the "structure" of a crystal, of a rock, &c. By "*structureless*" I mean not only that no threads, or fibres, or lines, or dots, or parts, or particles can be discerned by the use of the highest powers of the microscope, but that every part of the matter termed "structureless" is mobile, and can freely pass amongst other portions, and concerning which *structure* of every kind must be considered absent if the question be regarded from a purely theoretical standpoint only.

No tissue can be formed, no structure can be evolved, no secretion produced, no beat of heart or movement of respiration, no contraction of muscle, no emanation or flow of nerve-current, not even the lashing of a cilium, or the taking up of a particle of food, can be effected without changes in *the absolutely structureless.* How any one in these days, with the facts before him, can be searching for structure which shall enable him to account for actions and functions peculiar to living things is most extraordinary. All that lives, and all that has lived, has begun not in structure, but in the structureless; and whenever in a living thing structure is found there some time before would have been discovered *structureless living matter* only.

While no one can be found who will maintain that all function and peculiarity of arrangement, and of chemical composition, of variety of organisation and type in the living world, is due to original structure certainly existing, though not discovered, at the earliest period of existence of the minute germ, almost every one who writes or speaks on the subject seems to believe that "structure" is the undiscovered secret. On the other hand, to my mind the evidence we already possess is conclusive that all structure is a consequence, and not a cause, of prior changes in the structureless, and that universally in the living world "structure" is preceded by absolute structurelessness.

The source of all function as well as structure and character of all forms and types, is the structureless. It is to the operation of some force, power, or property temporarily (that is, while the matter in question is alive) in or upon the material particles of this matter, that structure is due. "Life" is associated with the structureless only, and is altogether independent, not only of structural peculiarities, but of internal chemical composition. Matter exhibiting structure never possesses the vital property of producing its like, and structural characters and chemical properties can be demonstrated only in the case of matter which has ceased to live,—not in the structureless substance which is actually alive,—that is during the time when it manifests all its wonderful powers of movement, formation, and transmission of power like its own to the non-living. Life must be sought for not in the structure, but in the structureless. It is here only we can study its working. In structure, and action, and function we see the results, the consequences of the working of life-power, but the life-power itself has fled ere structure can be discerned, or the presence of a definite chemical compound proved.

We *know* that the material substance of the structureless is alone under the dominion of life-power, and that the matter of all structure, like the rest of the lifeless matter of the universe, is under the sway of ordinary physical law. I do not see how we can proceed one step in the study of the truly vital until the absolute structurelessness of living matter, and the temporary domination of the physical and chemical by the vital, be admitted; and I venture to maintain that, if we had allowed our judgment to be guided by facts of observation and experiment only, we should long ago have accepted these propositions as established, necessary, and incontrovertible truths.

ORDINARY MEETING, April 19, 1886.

D. Howard, Esq., V.P.C.S., in the Chair.

The Minutes of the last Meeting were read and confirmed, and the following Elections were announced :—

Life Member :—Rev. R. Taylor, M.A., N. S. Wales.

Associates :—Rev. Canon F. R. T. Balfour, S. Africa ; W. Russell, Esq., N. S. Wales ; Rev. Canon Taylor, D.D., Liverpool ; Rev. C. H. Wainwright, M.A., Blackpool.

A lecture was then delivered by Mr. W. St. C. Boscawen, F.R.Hist. Soc., on "Recently Deciphered Assyrian Inscriptions." A brief discussion took place, after which the following paper was read by Mr. H. Cadman Jones, M.A., the author being unavoidably absent on duty at Beirût.

NOTES ON THE METEOROLOGY OF SYRIA AND PALESTINE. By Rev. George E. Post, M.D., Professor of Surgery and Diseases of the Eye and Ear, in the Syrian Protestant College at Beirût, Syria.

THE meteorology of Syria and Palestine can be understood only when taken in connexion with that of Northern Africa, Northern Arabia, the Syrian desert, Asia Minor, and the adjacent Mediterranean Sea.

The climate of Northern Africa, except on the sea coast, and of Northern Arabia, and the Syrian desert, is exceedingly hot and dry. So thoroughly is the air heated in its passage over the Sahara, that rain seldom falls in Upper and Middle Egypt, where there are neither mountains, nor any large body of water, to cool the air and precipitate its moisture. A glance at the accompanying tables, which were compiled from the records of the Lee Observatory of the Syrian Protestant College at Beirût, and at the graphic chart, which represents the same facts, as regards the direction of the wind, in a different form, will show that the south-west wind is the prevailing one on the Levantine coast, having blown for 172 days of 1883, 170 days of 1884, and 138 days as the mean average of eleven years and a half. The next in frequency is the west, which blew in 1885 for 66 days, and a general average of 50 days for eleven years and a half.

As long as the wind blows steadily from the west or south-west, there is usually no rain. But when it blows for a day or two from the east, south, or south-south-west, and then veers suddenly to the west or south-west, rain is very apt to fall. This appears again from the tables. In the month of January, 1885, there were thirteen days of south-east, one of east, and one of south wind. The large amount of 10·37 inches of rain was a natural result. Again in January, 1884, there were fifteen days of south-east wind, and 10·64 inches of rain. In January, 1883, there were five days of south-east, three of east, and four of south wind, with a rainfall of 12·73 inches. November of the same year gave, with nine days of south-east wind, and nine days of north-east, 15·30 inches of rain; and so on through the tables. Furthermore, a glance down the columns, and still better at the graphic chart, will show uniformly, that during the summer months, when there is little or no rain, there is little or no wind from the south, or east, or south-east. It might be inferred from these figures that the south, south-east, and east winds bring the rain. The Jews, in our Saviour's time, said, when they saw the south wind blow, "There will be heat." This is still true, and equally so of south-east and east winds, as they all blow over vast heated plains. In their course they lick up the moisture from the surface of the ground, and on reaching the sea, become loaded with vapour. After these winds have blown from one to five or six days, the direction of the gale usually changes suddenly to the south-west, and in a few hours a storm of rain follows. This is well understood by the residents of the country, native as well as foreign.

The wind which prevails while rain is actually falling is almost always between south-west-by-west and south-west-by-south. In exceptional cases, however, it may shower with an easterly wind, and very rarely with a northerly one. Job xxxvii. 22, although a mistranslation as respects the word *fair weather*, expresses a scientific fact. *Fair weather does come out of the north.* Often after a storm from the west do we see the wind from the north come down like a giant over the sea, smite the south-west wind in full career, beat it back, with its gloomy retinue of clouds, and, perhaps in a single hour, clear the sky, and let in a flood of brilliant sunshine over sea and land. This wind is cooled and robbed of its moisture during its passage over the successive snow-clad ranges of Asia Minor.

It will be seen that the annual average of rain for eleven years and a half at Beirût is 35·66 inches. It is remarkable that in nine and a half of those years the amount of the rainfall for the year was between 30 and 37 inches. Only in two, 1877 and 1883, when it was respectively 51·04 and 50·68, did it vary much from the general average. Far different, however, is the case with the rainfall for the rainy season, the stress of which is usually between November and March. Here there is a great discrepancy. The figures read 39·52; 23·32; 47·20; 48·93; 17·07; 41·15; 31·81; 38·74; 39·11; 46·71; 27·63. Now it happens that upon the winter's rain, and not upon the total for the calendar year, depends the harvest. Hence a calendar year like that of 1879, with the good rainfall of 33·68, following another calendar year with a rainfall of 32·32, may have a very light harvest, having enjoyed only 17·07 inches as the portion of rain allotted to maturing its crops. Its 13·37 inches of rain in December inured to the benefit of the harvest of the succeeding calendar year.

As might be expected, the rainfall grows less toward the south, until about the latitude of the 'Arîsh (the torrent of Egypt) one enters the comparatively rainless desert of the Tîh. This arises from the fact that the southern portions of the country are more and more surrounded by deserts, and in the Tîh deserts lie to the east, south, and west. In a record kept by Dr. Chaplin at Jerusalem for twenty-two years, and covering most of the period indicated in our tables, the mean annual rainfall was 22·96 inches,—nearly 13 inches, that is about a third of its rainfall, less than that of Beirût. In the rainy season of 1877–8, when there were 48·93 inches at Beirût, there were 42·932 inches at Jerusalem. In that of 1876–7 there were 47·20 inches at Beirût, and only 13·70 at Jerusalem. In 1879–80 there were 41·15 inches at Beirût, and 23·56 inches at Jerusalem.

Accurate records have not been kept of the rainfall in Northern Syria. Two visits to Cassius and Amanus, however, convinced the writer that the rainfall there must be heavier than in Central Syria. The evidence of this is found in the luxuriance of the forests; in the far greater abundance of the summer vegetation; in the perennial character of a large number of small streams, such as dry up in summer elsewhere throughout the East (and this notwithstanding the fact that the mountains of these chains are lower than those of Lebanon, and are not snow-clad from June to November, while the top of Lebanon is never free from snow); and finally in the testimony of the residents, who declare that the rain falls there more or less through the summer, and very copiously during the winter.

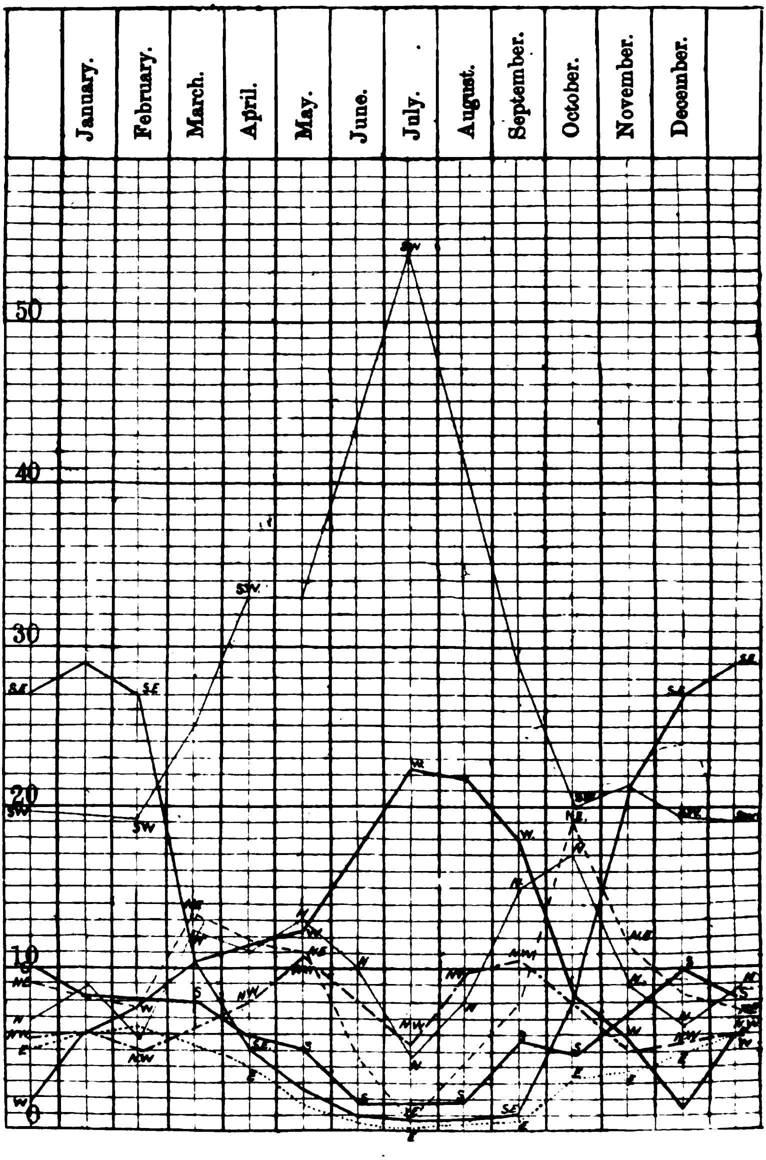
The rainfall of the Anti-Lebanon and Damascus is far less than that of the maritime plain, and the seaward face of

Lebanon. Many times heavy storms occur on the western slopes of Lebanon, while all is serene in Cœle Syria, and on the Damascus plain. The scene is very striking, when the observer in Cœle Syria, or on the top of Antilebanon, sees the dark cloud-masses roll threateningly from the west to the top of Lebanon, and then dissolve in mist, which is in turn dissipated by the clear sunshine of this torrid valley. The same phenomenon may be observed, even in a more striking manner, over the valley of the Jordan and the Dead Sea. The reason of the lesser rainfall in the regions east of the coast range is to be found in the fact that the greater part of the moisture is precipitated from the clouds while passing over that range, and in the proximity of the great desert which dries out the moisture that remains.

The "early rain" begins usually in September. In eight out of the twelve Septembers noted, there was some rain; in one, only six-hundredths of an inch. By the 10th or 15th of October, however, there has usually been a rain sufficient to thoroughly cleanse the surface of the ground, and to cause the dry watercourses to flow for a while. In eleven out of the twelve Octobers recorded there was rain, often considerable in amount. The families who have taken refuge in Lebanon from the summer heat of the sea-coast plain expect and await this early rain, as the signal for their return to their city homes. And these occur with sufficient regularity to cause little variation in the annual home-coming. The farmers also await this rain with assured confidence, as it is essential to soften the soil, and enable them to plough the ground, and put in the seed, before the heavy continuous rains from the latter part of December to the middle of March, when it would be impossible to do this work. A distinct break of a month or more, often with no rain, or slight showers, intervenes between the first copious rain and the setting in of the rainy season. The "latter rain" is rather a gradual lessening of the quantity of water, and increase in the intervals between the showers, than a rain coming after a long interval, in the manner of the early rains. The tables show a gradual tapering off from March to May, after which there is practically no rain until September or October. In one summer of the twelve only was there but one month without rain, usually three, and sometimes five. Practical immunity from danger of showers in travelling exists for seven months. In the heavily-wooded Amanus range showers occur all through the summer.

As regards the manner of the rain, the greatest difference exists between those seasons when the water comes down

GRAPHIC CHART of the direction of the wind at Beirût, Syria, founded on observations taken three times daily. The figures represent the mean of the number of times each direction was observed during each month, the different kinds of lines indicating the directions. Prepared for the writer by Professor Robert West, M.A.



almost in sheets, accompanied by violent wind, and those more favourable winters in which the showers are gentle, penetrating, and unaccompanied by violent tempests. The velocity of the wind has reached 8. In such a wind, occurring the 18th of November, 1874, the dome of the Lee Observatory, in Beirût, where the accompanying tables were made up, was blown off.

The thermometer is far steadier than the rainfall or the wind. The variations of the mean of temperature for any given month are slight, more particularly during midsummer. Thus, with the one exception of 1878, when it reached 88·34°, the mean temperature of August only varied from 82° to 85·60° for eleven years, and was generally about 84°. July is almost as regular; September and June hardly less so.

The difference between the maximum and minimum of the thermometer is greatest during the rainy season, particularly in March, when the temperature rose in 1877 during a sirocco (east, south-east, or north-east wind) to 90°, and fell during the subsequent storm to 43°; or in April, when in the same year the maximum reached 97·2°, while the minimum fell to 48·9°. The average difference during the rainy season is nearly 40°, whereas for the summer months it is from 25° to 30°. The highest temperature recorded for all these years was 100°, and the lowest 35·1°, and the highest solar maximum was 160°. Thus the difference between the hottest day of the hottest summer, and the coldest day of the coldest winter, is only 65°. The writer has known a change as great as this to occur, within twenty-four hours, in the northern part of New York, the thermometer being one morning 35° below zero, and the next morning the roofs dripping from the thawing of the snow. In summer especially the temperature is very steady. Day after day the temperature registers the same at a given hour, in the same place. Between day and night the variation is often not more than 10°, sometimes less. The rise of temperature from midwinter to midsummer is usually very steady and gradual, as is also the fall to the midwinter temperature again. Such an even climate is peculiarly favourable to pastoral labours, hence Syria and Palestine have always been noted for their flocks and herds.

The barometer partakes of the steadiness of the thermometer. For the whole year 1884, the difference between the maximum and minimum was only 0·880 in.; and in 1885, 0·819 in. The highest barometer is always during the months of the heavy rains, and the lowest usually just after the rainy season is over. The barometer is so constant as to enable a traveller to use the aneroid with far more advantage than in a more variable climate. The barometer *is usually* on the rise during a rain. A south-west wind usually concurs with a rise from a low barometer. A north wind may come with any state of the barometer. A west wind accompanies a high rising barometer.

During the whole period covered by these tables, snow fell only once at Beirût. It seldom comes lower than 2,000 feet altitude, and does not last any length of time lower than 5,000 feet. Hail, however, is quite frequent, more especially in February and March.

It is impossible to doubt that Syria and Palestine are suffering, in common with all the East, from the denudation of forests, and consequent diminution in the rainfall, and irregularity in its advent. Certainly, in the northern wooded regions the rain falls during the summer as well as the winter. Observations have not yet been extended over a sufficient number of years to be decisive, but there are indications that increasing cultivation, especially tree-planting on Lebanon and in the maritime plains, is exercising a favourable influence on the climate and water supply. Could the heights of Lebanon be again clothed with forests of cedar, and the same be planted on the Anti-Lebanon range, a greatchange would come over the whole Levant. The rains would set in earlier, continue later, come more mildly, and be less frequently accompanied with destructive floods than at present.

	Mean, Barometer.	Mean, Thermometer.	Direction of Wind, days.								Rain, inches.	Rain of Rainy Season.
1874			S.	S.W.	W.	N.W.	N.	N.E.	E.	S.E.		
June	29·796	75·99	1	19	5	...	5	...	...	...	0·	
July	29·666	81·15	2	21	...	3	3	...	2	...	0·	
Aug.	29·717	80·4	...	11	13	6	1	...	...	...	0·	
Sept.	29·717	82·	2	6	8	3	7	3	1	...	0·	
Oct.	29·689	79·9	1	2	5	11	10	1	1	...	0·233	
Nov.	29·959	70·6	5	3	3	1	8	8	1	1	7·02	
Dec.	29·922	62·3	2	6	2	8	5	5	1	2	7·97	
Half-year	...	...	13	68	36	32	39	17	6	3	15·223	

	Mean, Barometer.	Mean, Thermometer.	Direction of Wind, days.								Rain, inches.	Rain of Rainy Season.
			S.	S.W.	W.	N.W	N.	N.E.	E.	S.E.		
1875												
Jan.	30·072	54·8	1	15	2	4	3	3	1	2	5·34	
Feb.	29·923	57·3	2	10	2	4	5	2	1	2	5·12	
March ...	29·913	58·71	4	7	3	7	2	4	2	2	9	
April	29·961	63·5	1	9	6	8	3	1	1	1	2·48	
May	29·918	67·3	...	11	2	5	10	2	1	...	2·36	39·52
June	29·811	80·8	1	19	4	3	3	...	...	...	0·	
July	29·747	84·2	1	23	3	3	1	...	...	...	0·	
Aug.	29·789	84·4	2	14	5	5	3	2	...	...	0·	
Sept.	29·918	79·88	1	8	1	4	13	3	...	...	0·06	
Oct.	29·992	75·38	...	4	3	3	15	4	1	1	0·	
Nov.	30·001	67·	2	10	4	3	6	1	1	3	5·32	
Dec.	30·058	59·97	3	17	2	1	3	1	1	3	5·06	
			18	147	37	50	67	23	9	14	34·74	
1876												
Jan.	30·160	55·76	1	3	1	8	8	3	4	4	1·57	
Feb.	30·034	58·76	3	10	3	2	2	4	2	3	4·61	
March ...	29·924	64·76	2	7	4	3	2	9	2	2	1·91	
April	29·937	68·19	...	8	2	3	4	7	3	3	4·35	
May	29·903	76·30	1	9	2	1	5	11	1	1	0·28	
June	29·902	80·25	2	12	6	2	8	...	...	...	0·04	
July	29·772	84·02	...	28	3	...	...	...	...	...	0·12	23·32
Aug.	29·804	84·20	...	4	16	10	1	...	...	...	0·	
Sept.	29·899	82·6	...	9	9	5	4	...	...	...	0·	
Oct.	29·96	77·23	2	9	4	3	6	6	2	1	2·48	
Nov.	30·004	66·68	2	9	3	4	2	2	...	8	10·75	
Dec.	30·120	64·42	5	13	3	2	3	3	...	2	4·37	
			18	121	56	43	45	45	14	24	30·48	

	Mean, Barometer.	Mean, Thermometer.	Direction of Wind, days.								Rain, inches.	Rain of Rainy Season.
			S.	S.W.	W.	N.W.	N.	N.E.	E.	S.E.		
1877												
Jan.	30·068	59·18	3	15	5	2	1	2	2	1	6·44	
Feb.	30·009	58·69	2	16	3	...	1	1	1	4	15·74	
March	30·036	63·26	2	8	2	2	4	9	2	2	4·87	
April	29·895	68·27	1	11	1	1	3	11	1	1	2·55	47·20
May	29·934	74·14	2	13	2	3	4	5	1	1	0·	
June	29·921	79·43	...	15	3	6	3	3	...	...	0·	
July	29·819	85·1	...	23	6	2	...	...	...	...	0·	
Aug.	29·859	85·62	...	8	8	4	4	4	3	...	0·23	
Sept.	29·934	83·24	2	7	3	4	10	4	...	...	0·25	
Oct.	29·958	79·70	1	8	3	1	2	10	...	6	3·94	
Nov.	30·001	67·	2	11	3	4	5	2	...	3	6·34	
Dec.	30·027	60·98	6	8	3	2	2	5	2	3	10·68	
			21	143	42	31	39	56	12	21	51·04	
1878												
Jan.	30·089	56·30	6	5	2	4	2	3	1	8	10·97	
Feb.	30·096	54·3	3	6	4	4	5	1	2	3	7·17	
March	30·042	60·50	3	11	3	3	6	3	2	1	4·35	
April	29·902	67·28	2	13	5	1	3	11	...	2	1·67	
May	29·915	73·22	2	15	3	4	1	6	...	...	0·60	
June	29·829	80·42	1	17	6	1	3	2	...	...	2·73	48·93
July	29·741	85·64	2	9	8	3	5	4	...	...	0·	
Aug.	29·753	88·34	3	13	7	3	4	1	...	...	0·	
Sept.	29·834	83·84	1	8	9	4	4	2	1	1	0·82	
Oct.	29·990	78·	...	3	5	3	11	7	2	...	0·65	
Nov.	30·130	73·6	1	3	1	4	6	8	3	4	0·	
Dec.	30·091	66·09	3	9	3	3	3	8	1	1	3·36	
			27	114	56	37	53	56	12	20	32·32	

	Mean, Barometer.	Mean, Thermometer.	Direction of Wind, days.								Rain, inches.	Rain of Rainy Season.
			S.	S.W.	W.	N.W.	N.	N.E.	E.	S.E.		
1879												
Jan.	30·106	60·92	3	8	5	3	4	5	...	3	3·10	
Feb.	30·079	65·24	2	10	3	2	4	3	2	2	2·23	
March ...	29·910	62·33	2	13	3	2	3	4	2	2	5·60	
April	29·970	69·26	1	8	4	2	5	9	1	...	0·54	
May	29·954	73·38	2	6	6	6	3	4	3	1	0·77	17·07
June	29·930	81·35	...	15	5	7	1	2	...	...	0·	
July	29·739	85·75	...	14	10	6	1	...	...	...	0·	
Aug.	29·741	84·20	...	15	5	5	4	2	...	...	0·	
Sept.	29·871	82·05	2	4	6	6	4	6	1	1	0·12	
Oct.	30·023	74·96	1	11	3	6	6	2	...	2	3·39	
Nov.	30·070	67·55	3	13	2	2	4	3	...	3	4·56	
Dec.	30·446	60·58	3	7	3	2	1	9	1	5	13·37	
			19	124	55	49	40	49	10	19	33·68	
1880												
Jan.	30·330	52·20	4	8	2	2	6	5	2	2	9·33	
Feb.	30·048	58·60	1	2	4	3	3	8	3	5	4·20	
March ...	29·940	57·81	2	7	2	3	5	6	3	3	3·58	
April	29·924	55·70	2	13	2	4	2	6	...	1	2·12	
May	29·815	70·30	...	10	6	3	3	7	1	1	0·48	41·15
June	29·819	79·50	1	12	4	4	4	5	...	...	0·	
July	29·760	82·88	...	12	10	4	3	...	1	1	0·38	
Aug.	29·800	84·40	2	9	12	5	3	...	...	...	0·	
Sept.	29·910	81·20	1	11	4	4	7	3	...	...	1·01	
Oct.	29·993	77·90	...	5	3	3	3	13	2	2	0·51	
Nov.	30·056	71·80	2	4	3	3	5	8	1	4	1·05	
Dec.	30·028	59·50	4	7	2	2	1	4	3	8	9·66	
			19	100	54	40	45	65	16	27	32·32	

	Mean, Barometer.	Mean, Thermometer.	Direction of Wind, days.								Rain, inches.	Rain of Rainy Season.
			S.	S.W.	W.	N.W.	N.	N.E.	E.	S.E.		
1881												
Jan.	30·070	61·70	...	13	2	3	1	5	2	5	1·32	
Feb.	29·910	58·00	1	8	2	2	2	4	3	6	9·44	
March ...	30·004	61·70	...	12	3	3	4	5	...	4	5·36	
April	29·910	67·40	2	14	1	4	2	5	...	2	2·97	
May	29·950	71·70	1	11	4	4	5	6	...	...	0·	
June	29·910	72·70	...	15	5	2	4	4	...	...	0·11	31·81
July	29·776	82·80	...	21	6	4	...	...	...	...	0·	
Aug.	29·745	85·60	1	17	4	2	2	5	...	...	0·	
Sept.	29·871	82·90	2	11	7	1	8	1	...	...	0·76	
Oct.	29·993	76·50	2	9	4	1	10	4	...	1	1·39	
Nov.	30·010	67·40	4	8	3	2	2	3	3	5	5·54	
Dec.	30·066	60·80	5	8	1	2	5	1	1	8	5·76	
			18	147	42	30	45	43	9	31	32·65	
1882												
Jan.	30·186	56·70	1	9	1	1	5	4	...	10	4·91	
Feb.	30·103	53·20	1	9	1	1	2	4	2	8	10·18	
March ...	30·016	62·30	1	10	2	3	8	5	2	...	1·32	
April	29·890	66·00	...	16	5	2	6	...	1	...	6·25	
May	29·910	69·60	...	16	6	4	4	...	...	1	2·57	
June	29·898	76·10	...	13	5	4	5	3	...	...	0·06	38·74
July	29·770	81·40	...	19	12	...	...	...	...	...	0·	
Aug.	29·812	82·60	...	8	14	8	1	...	...	...	0·	
Sept.	29·916	81·70	...	9	10	7	4	...	...	...	0·	
Oct.	29·989	74·64	1	10	3	...	14	3	...	...	3·12	
Nov.	30·028	68·16	1	11	1	3	6	6	...	2	3·10	
Dec.	30·052	61·10	...	9	2	2	3	3	2	10	6·36	
			5	139	62	35	58	28	7	31	37·87	

	Mean, Barometer.	Mean, Thermometer.	Direction of Wind, days.								Rain, inches.	Rain of Rainy Season.
			S.	S.W.	W.	N.W	N.	N.E.	E.	S.E.		
1883												
Jan.	29·994	56·20	4	12	1	1	3	2	3	5	12·73	
Feb.	29·979	55·26	4	11	4	...	...	3	2	4	9·25	
March ...	29·952	64·40	2	12	6	2	2	5	...	2	3·30	
April	29·886	65·60	1	12	5	5	4	3	...	...	0·90	
May	29·934	70·78	...	15	8	1	3	4	...	...	0·35	39·11
June	29·847	78·65	...	22	4	3	1	...	...	...	0·	
July	29·780	81·90	...	29	2	...	...	...	...	...	0·	
Aug.	29·801	83·47	...	16	2	7	5	1	...	...	0·29	
Sept.	29·906	81·55	...	11	7	5	3	4	...	...	0·	
Oct.	29·995	76·90	...	11	3	2	2	13	...	...	2·12	
Nov.	30·010	67·30	...	11	...	1	...	9	...	9	15·30	
Dec.	30·040	60·60	1	10	...	...	1	3	...	16	6·44	
			12	172	42	27	24	47	5	36	50·68	
1884												
Jan.	30·068	54·60	...	13	...	...	1	2	...	15	10·64	
Feb.	30·026	55·30	...	7	...	2	2	4	...	15	6·07	
March ...	29·964	60·10	...	13	...	3	3	8	...	4	3·65	
April	29·878	66·40	1	12	5	4	4	3	...	...	1·65	
May	29·908	71·16	1	15	1	5	6	3	...	...	0·55	46·71
June	29·915	77·90	...	19	7	2	1	1	...	...	0·	
July	29·787	80·35	...	21	5	3	2	...	...	...	0·01	
Aug.	29·791	82·00	...	22	2	3	3	1	...	...	0·03	
Sept.	29·902	76·30	...	19	...	2	8	1	...	...	1·01	
Oct.	29·992	74·20	...	10	...	4	6	7	1	3	1·94	
Nov.	29·992	74·20	3	12	...	1	...	8	...	6	4·35	
Dec.	30·065	65·20	1	7	1	...	3	7	...	12	0·24	
			6	170	21	29	39	45	1	55	30·14	

	Mean, Barometer.	Mean, Thermometer.	Direction of Wind, days.								Rain, inches.	Rain of Rainy Season.
1885			S.	S.W.	W.	N.W	N.	N.E.	E.	S.E.		
Jan.	29·991	56·60	1	10	1	...	4	1	1	13	10·37	
Feb.	30·034	59·30	1	9	...	...	3	4	...	11	4·16	
March ...	29·941	62·40	...	12	1	1	4	10	1	2	1·64	
April	29·878	65·80	...	14	1	5	1	6	...	3	3·43	
May	29·893	74·60	1	14	1	5	2	6	2	...	0·05	
June	29·847	78·40	...	24	4	1	1	...	...	..	0·40	27·63
July	29·781	82·50	...	13	18	...	...	...	...	...	0·	
Aug.	29·749	83·30	...	14	10	4	3	...	...	...	0·	
Sept.	29·877	80·90	...	10	6	2	9	3	...	...	0·70	
Oct.	30·000	76·80	...	15	2	1	2	9	2	...	0·08	
Nov.	30·018	68·90	2	7	9	...	3	8	1	...	3·91	
Dec.	30·048	62·40	2	6	10	1	2	7	1	2	6·91	
			7	148	63	20	34	54	8	31	31·55	

Mean of eleven years and a half.

			16	137	49	36	46	46	9	26	35·66	

The CHAIRMAN (Mr. D. Howard, V. Pres. Chem. Soc.)—The paper just read is a very valuable contribution to our knowledge of the meteorology of Syria and Palestine. Our thanks are due to its author, and also to Mr. H. Cadman Jones for reading it. It is now open for any present to offer remarks upon it.

Sir JOSEPH FAYRER, K.C.S.I., F.R.S.—I am sure that the Institute is much indebted to Dr. Post for his valuable paper. It is a very interesting and useful contribution to the meteorology of the part of the world with which it deals, and we may hope that other observers will be able to add to what Dr. Post has so ably recorded. It seems to me that it would be ungracious to criticise, nor do I know that I am in a position to do so; still, there are one or two things that have struck me as somewhat remarkable. Dr. Post speaks, in his paper, of the climate in Syria and Palestine as being an equable one, and says that "such an even climate is peculiarly favourable to pastoral labours, hence Syria and Palestine have always been noted for their flocks and herds." When we recall the physical condition of the country, with its numerous valleys and mountain ranges, the mountains rising from plateaux of 2,000 and 2,500 feet, to 4,000 and 5,000 feet, and even higher, with great deserts on the one side, and the sea on the other, one would hardly expect to find a very equable climate. Nor does it seem to me that Dr. Post's record shows it to be so. I could not help thinking, while the paper was being read, of the beautiful story of Ahab and the Prophet Elijah on Mount Carmel; how the latter sent his servant to look toward the sea, when the servant saw a little cloud arising out of the sea, like a man's hand, and how Elijah then sent to Ahab, telling him that he was to prepare his chariot and get down, that the rain stop him not. Such must have been the condition spoken of in the paper. There is a continuance of hot weather, and then the rain comes on, as one sees in India and in the tropics. The last paragraph of the paper concerning forest denudation is very interesting. I should like to ask the Author to tell us how the views entertained on this particular subject at the present time compare with those of 1,500 or 1,800 years ago? that the state of things in that part of the world has wonderfully altered under Turkish and other rule there can be no doubt. Instead of a rich and fertile territory, feeding and nourishing a large population, as was once the case, we know that it is altogether different at the present day. But what is the cause? If it be true that there has been a great denudation of the forests—that the trees have been cut down on the mountains—we might expect, from what occurs in other parts of the world, that there would be a considerable diminution of the rainfall. And we might hope that the restoration of vegetation and the replanting of the hills and surface of the soil would bring such an increase of rainfall as would restore the natural equilibrium. I do not know whether the records that would give the information we need, as to there having been a steady diminution of the rainfall, have been preserved. I believe that it has been thus in Greece, and probably it has been so here. I have only to add that I regard the paper as very interesting and valuable. Not having had time to read it before to-night, I should not like to criticise it further. I can, therefore, only express my gratification at such a paper having been read here, and offer my thanks to the member who has so kindly contributed it to the proceedings of this Society.

Mr. W. St. Chad Boscawen, F.R.Hist.Soc.—As I resided at one time for nearly three months in Beirût, perhaps I may be allowed to refer to one or two points upon which I may be able to throw a little light. I do not speak on the subject of meteorology, because I know nothing about it; but rather with reference to Lebanon, a matter of some interest. There can be no doubt that the Assyrian and Egyptian inscriptions show the time when Lebanon was covered with large forests of cedar pine to be a very early period. There is one interesting circumstance in regard to the proposed restoration of these plantations. The present Turkish Ambassador in this country, Rustem Pacha, was, at the time I was out there, Governor of the Lebanon; and I believe he and Midhat Pacha were the instigators of important improvement in the Lebanon district, in the replanting of the old forests. I journeyed on one occasion from the Damascus road to a very out-of-the-way village about eight miles off—one of the worst roads I ever travelled—and we found that all along the slope of the hill plantations of firs had been established. I may specially mention that on the Damascus road, about three miles from Beirût, a forest of firs covering an area of about three miles had been planted. The trees had been growing about six years when I saw them, and are now about twelve years old. The inhabitants of the houses built in the neighbourhood of the wood are already beginning to find the place much pleasanter now than before the trees were planted. If the Governors of the Lebanon would only carry on this work of replanting the mountains, and stop the cutting down of trees, which, even at the present day, goes on in some parts of the Northern District, a great improvement might, in a comparatively short period, be effected in the climate of the country. Perhaps it would not be going beyond the scope of this Institute if I were to say, from the experience I had during the time I was out there, that I never saw a Turkish Governor who did so much in so short a time as Midhat Pacha did in that district, in road-making, police organization, and other matters of social importance. Now, unfortunately, he is lost to the work.

Sir Joseph Fayrer.—May I ask whether there are any other observatories where records were kept, besides those referred to by the author of this paper?

Captain Francis Petrie, F.G.S. (Hon. Sec.)—I am informed that there is one at Jerusalem, one at Jaffa, and two others, one being at Nablous.

Mr. Boscawen.—I think there is one at Nazareth. There certainly was at the time I spoke of, namely in 1879. It was not elaborately fitted up, but it was a place that in all essential respects served the purposes of an observatory.

The CHAIRMAN.—The question of the effect of forests upon climate is one of very great importance. It is not Syria only that is suffering from forest denudation, for one constantly sees, in Provence and the Riviera, how terribly the climate suffers from the cutting down of the timber, while the mere work of keeping the soil on the slopes of the hills from being washed down by the torrents of rain that occur in the wet season, is enormously increased by the removal of the trees from the hill sides. The matter is one of intense interest, all over the world, and even in Europe it is only being taken up in time—if, indeed, it be in time.

The meeting was then adjourned.

THE AUTHOR'S REPLY.

1. *Equability of the Climate of Syria and Palestine.*

SIR JOSEPH FAYRER says, "When we recall the physical condition of the country, with its numerous valleys and mountain ranges, the mountains rising from plateaux of 2,000 and 2,500 feet to 4,000 and 5,000 feet, and even higher, with great deserts on the one side, and the sea on the other, one would hardly expect to find a very equable climate."

In point of fact, however, the climate is equable. Of course there is a great difference between the temperature of the different elevations. Thus, the standard shade temperature of the summer months, at 10 a.m., is between 82° and 88° F., at Beirût on the sea-coast. At a level of 2,500 to 3,000 feet on the maritime slope of Lebanon, the thermometer will range from 73° to 80°, while at the former degree in Beirût. Day after day the thermometer will register the same degree, at the same hour, in the same place. And for months the range of variation hardly exceeds that expressed by the above figures. As one rises to the higher regions of Lebanon and Anti-Lebanon, the range of variation between day and night increases, owing to the increasing nearness to the snow-drifts, which remain on the summit through the year. But on the plains and the lower mountain levels, the variation between day and night is very steady. Not having taken thermometric observations in the night, I cannot say what is the exact difference between the temperatures, but frequent journeys by night in all parts of the country enable me to say that one can predict with almost certainty the change of clothing needed to make himself comfortable, both by day and night. And in journeys of many days together, the same changes are required at the same hours.

Such sudden changes as those from our sultry August mornings to our cool afternoon thunder-gusts, and chilly damp nights, are *quite unknown* in Syria and Palestine. Twice only in twenty-three years has the writer known of a serious rain-storm in midsummer, and even then it was unaccompanied with severe cold.

It may be safely said again, then, that on the sea-coast and inland plains and the lower mountains, during the whole of the dry season, the climate is equable, and a traveller has need of few precautions against changes of weather.

On the mountain tops of Lebanon and Anti-Lebanon, above 8,000 feet, the great snow-drifts cool the air at night almost to the freezing point. The writer encamped for three nights of September on Jebel Sunnîn, at a height of 8,500 feet, and found the range between day and night about 35° F. Nevertheless, the temperature of any given hour of one day varied little from that of the preceding or succeeding ones.

As the rainy season approaches, the range of variation between one day and another increases, and reaches its maximum towards the end of the heavy rains in the latter part of February and the early part of March, when the sirocco winds sometimes raise the temperature to almost summer heat, and the sudden change to the stormy winds brings about as sudden a fall, almost to midwinter cold. Some of the heaviest falls of snow on the mountains come after a heated term in the latter part of the winter; yet, even then, the changes are infrequent, and when a change has taken place, either to fair weather or foul, it is apt to last for several days. Thus we often have ten days or a fortnight of clear, cool, but even weather in midwinter, followed by the prodromata of a storm, and then an equal period of boisterous wind, driving rain, and often, what is for this country, severe cold, varying, of course, with the altitude.

Among other evidences of the regularity of the climate, I may mention the almost uniformity of the occurrence of sheet-lightning in the north for several days before the "early rain" in the autumn. This phenomenon is so constant, that on its occurrence every one predicts the speedy approach of the first longed-for shower of autumn. This lightning, which is often as vivid and beautiful as the aurora borealis of northern latitudes, is far distant, unaccompanied by any rumbling of thunder, and often with a sky quite cloudless except in the north, where the display is made, and sometimes in a sky quite cloudless everywhere. This lightning does not occur in midsummer nor in spring. In winter the lightning is more regularly seen in the west and south-west, though it may appear in other quarters of the sky. Thunderstorms of sudden origin are not known here at all. The severest strokes of lightning occur in the course of the long, steady winter storms.

2. *Denudation of Forests.*

It is clear from the Bible history that there were forests in those days where all is now bare. In Solomon's days the wood of the cedar of Lebanon was shipped, in all probability, from Tyre and Sidon. In that case, we must believe that Southern Lebanon had large forests of this valuable tree. Even were we to suppose that the Tyrians obtained the tree from Northern Lebanon, there must have existed there large forests of it, to yield timber in the quantities then furnished. The author has discovered extensive forests of cedars in the Amanus, and it is well known that they are abundant in the Taurus. This implies a connexion, through the Nusairy chain, between Amanus and Lebanon, by which these forests were propagated. That these and other forests existed in Biblical times is clear from the fact that the Phœnicians were a maritime power, and largely given to shipbuilding. In the then condition of the world, it is every way improbable that they built with foreign timber. The process of denudation is still in progress. The author has visited the sites of several groves of cedars which have been felled during the last thirty years. The process is going on at an alarming rate in Cassius and Amanus, where many trees are barked for tanning purposes, and many more felled for timber and fuel, while no measures are taken for replanting the forests. The laws of the country regarding pasturage on the public lands on the mountains make it impossible even for so enlightened a governor as Rustem Pacha, who was fully convinced of the importance of replanting Lebanon with trees, to carry out his wishes on this subject.

A book has been written by the Hon. Mr. Marsh, formerly U.S. Minister at Constantinople, setting forth in detail the evidence of the changes, brought about by human instrumentality, in the old-inhabited lands of the East; and, foremôst among the destroying agencies which have devastated these fair and fertile lands, he has shown to be the cutting down of the forests, or forest fires kindled by the carelessness or malice of the people. In the Amanus it is no uncommon sight in summer to see a mountain side on fire. The peasants fell the trees, let them dry, and then burn them to clear the land for sowing. Such clearings are enormously productive for a while, but the soil is soon exhausted, or washed away by the floods of winter.

3. *Plantations of Trees.*

The trees referred to by Mr. Boscawen are not firs, but pines, the *Pinus maritima.* They are not (except in the case of those on the Beirût plain, which were planted by Ibrahîm Pacha about 1840, to arrest the progress of the blown sands, which threatened to cover the irrigated grounds about the Beirût river) government property, nor is the planting aided by government, but is purely a private enterprise, from which a good profit is realised.

Midhat Pacha had nothing to do with the Lebanon in any way, and could not have in any way influenced tree-planting. As for Rustem Pacha, whom the writer knows intimately, and upon whom he urged most earnestly the importance of this subject, he frequently expressed his regret that he had no power to replant the mountains with trees, owing to the vested rights of the shepherds, who would not yield a jot of their privileges. Cyprus has suffered in the same way. A forester appointed by the British government is now making arrangements to begin the work of restoration. There, as here, the goats are the great hindrance. But for them, the forests would in many places extend by natural processes, but as they nibble the seedlings, no tree can grow where they are allowed to pasture.

4. *The moisture of different parts of Syria and Palestine* differs greatly. The sea-coast plain is loaded with moisture. Steel instruments soon rust out in Beirût and other coast cities. The maritime slopes of Lebanon and its continuous ranges north and south are liable to be wrapped in clouds, which makes the air at such times damp. At other times the mountain air is dry. The air of the table-lands is dry and stimulating to the nerves.

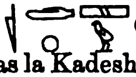
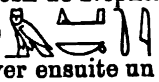
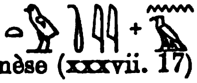
ORDINARY MEETING, May 3, 1886.

Rev. W. Wright, D.D., in the Chair.

The Minutes of the last Meeting were read and confirmed, after which the following paper was read by Mr. W. St. Chad Boscawen, F.R.Hist.Soc., the author being unavoidably absent in Egypt on an exploring expedition.

Mr. Boscawen said: Those who have not studied the subject will desire to know where the names to which the paper relates were found. In 1872, M. Mariette was excavating in the Temple of Karnak, endeavouring to clear it out as thoroughly as possible in order to obtain the plan, which he was so successful in getting, and with which he has illustrated his great work on Karnak. In clearing the great gateway of the Temple, which was known to have been built by Thothmes III., he excavated to the depth of several feet, and found a list of names extended right down to the foot of the pylon. The inscriptions, which were published by him in a separate part of his work on Karnak, consisted of several hundreds of geographical names of cities in Syria, Palestine, and Nubia. Since that time M. Maspero, who has succeeded M. Mariette as director of the explorations in Egypt, has gone over these names very carefully. Of course, in no study more than that of Egyptology is the old proverb that "two heads are better than one" better exemplified, especially in connexion with the work of copying inscriptions. There are very few inscriptions of which we do not obtain a better copy when a second person has gone over them. The result is, therefore, that in M. Maspero's copy we have an improvement on that of M. Mariette, and I think that the long study M. Maspero has given to the work makes his paper very important.

SUR LES NOMS GEOGRAPHIQUES DE LA LISTE DE THOUTMOS III. QU'ON PEUT RAPPORTER À LA GALILÉE. By G. Maspero.

Je n'ai rien à dire des deux premiers numéros de la liste; sinon que  Qodshou est pour moi la Qodshou de l'Oronte, non pas la Kadesh de Nephtali,* et que, malgré l'autorité de Conder,† je place  Mâgidi, à Lejjun, au pied du Carmel. Pour trouver ensuite un nom dont l'identification soit certaine, il faut descendre jusqu'au No. 9:  Doutina, est certainement la Dothaïn de la Genèse (xxxvii. 17) דֹתָן, pour laquelle le second livre des Rois (vi. 13) nous

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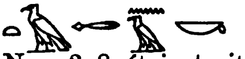
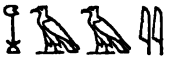
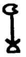
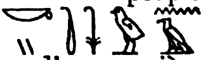
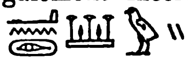
* Mariette, *Les Listes géographiques des Pylônes de Karnak*, pp. 12–13.
† *Palestine Exploration Fund*, 1881, pp. 86–88, 232–234, 319–322.

donne une forme דֹּתָן plus rapprochée de l'orthographe hiéroglyphique. Selon les analogies du reste de la liste, c'est donc entre Lejjûn et Tell Dôthân qu'il convient de chercher la position des six localités intermédiaires, mais doit-on diriger le regard vers les cantons placés au nord du Carmel, ou vers les cantons placés au sud? Les localités situées au nord sont énumérées dans la liste vers le No. 42, autour de  Taânak; il est donc probable que les Nos. 3–8 étaient situés, au moins en partie, sur le versant méridional.

Le premier de ces bourgs (No. 3)  Khaaï répond très exactement au mot חַוָּה *vicus.* Je ne trouve qu'une seule localité dont le nom puisse à la rigueur se rapprocher de Khaaï; c'est celui de Deir el Haoua, mais je ne connais pas de cas où le son dur  ח soit rendu en arabe par ץ, et cela suffirait seul à me faire rejeter l'identification. Il ne faut pas non plus, malgré la ressemblance, vouloir y reconnaître les Hivites de la Bible: les Hivites sont un peuple et Khaaï est une ville. Le numéro suivant  Gît-Souna nous permettra peut-être d'indiquer d'une manière générale le point du compas vers lequel on doit chercher Khaaï. Gît-Souna, transcrit גַּת־סוֹן ou גַּת־שׁוֹן, est un des noms assez nombreux commençant par l'élément גַּת; si la seconde partie est tombée, comme c'est parfois le cas dans composés, Gît-Souna sera l'un des nombreux Djett qu'on rencontre sur la carte de Palestine. Le Djett, qui conviendrait assez bien ici, est celui qui est près de l'Ouady Abou-Nâr, non loin de la grande route qui mène de Kakôn à Lejjun.* Si l'on admet cette identification, Khaaï aura dû être placée quelque part dans l'Ouady Arah, peut-être vers Khan ez-Zébadnéh, à l'endroit où la route bifurque.

Les numéros suivants sont également incertains. J'avais rapproché le second élément de  An-Shaouï de שָׁאָה, שׁוֹא, *strepuit, fragorem edidit,* ou de שָׁוָה, Chald. שְׁוָא, *planus, æquus fuit,* si bien que An-Shaouï aurait signifié *la fontaine bruyante* ou la *fontaine de la plaine.* Il y avait sur le territoire de Juda une vallée de nom analogue,

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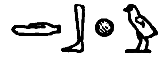
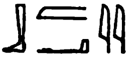
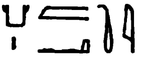
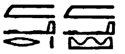
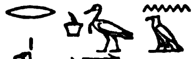
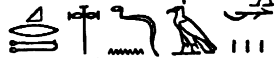
* Cette identification a été proposée par Conder, *Palestine Expl. F.*, 1876, p. 93.

עמק שוה, où les rabbins préféraient pour שוה, le sens *tomber d'accord.*[*] Quelque soit l'intérêt de ces étymologies, An-Shaouï devait être située comme Djett et Tell Dothân, à droite ou à gauche de l'Ouady Abou-Nâr (Ouady Selhab), et c'est dans la même direction qu'on peut s'attendre à rencontrer  Dibkhou,  Boumâï, et  Kamâti.

Dothain est séparé de  Mâromâ, qui de l'avis général est Mérom, par deux noms (No. 11)  Roubina ou Loubina, et (No. 12)  Kart-Nizanaou, la ville des fleurs.† La première de ces deux villes a été identifié par De Rougé et par Mariette avec לְבָנָה Lebnah de Juda, ou avec לְבוֹנָה Lebonah de Samarie; par Conder avec la לִבְנַת Λαβανάθ de Galilée. Tout compte fait, il me paraît préférable de rattacher Loubina, et par suite Qart-Nizanaou, au groupe auquel appartient Mérom. Loubina trouvera alors son équivalent dans Kharbét Loubbân, Kharbét Lobbouna, qui est situé à quelque distance du Ras en-Nakourah, presque en vue de la mer.‡ L'emplacement de Qart-Nizanaou קַרְת־נִצָּן, est encore moins facile à soupçonner que celui de Loubina. Je ne serai pas éloigné cependant de conjecturer que le קַרְתָּה de Zabulon (Josué xxi. 34) est identique à notre ville: si l'on a pu supposer que Gath est une forme écourtée du nom plein Gath-Rimmôn, on peut admettre que Qarta est l'abréviation de Qart-Nizanaou. Malheureusement, la situation de Qarta n'est rien moins que certaine, non plus que celle de מֵרוֹם Mérom, bien que la transcription grecque Μερρών, Μερρῶν, semble donner raison aux savants qui proposent de voir dans cette dernière ville le village actuel de Meirôn. Il n'est pas impossible pourtant que

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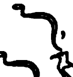
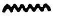
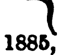
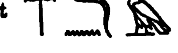
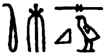
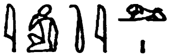
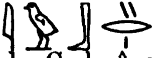
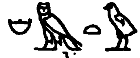
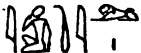
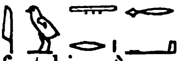
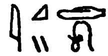
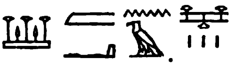
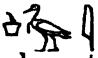
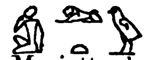
[*] Reland, *Palæstina*, t. i., pp. 356–357; Neubauer, *Géographie du Talmud*, pp. 50–51.

[†] La lecture Kiriath-Sannah de De Rougé et de Mariette admet une transcription impossible de ש par , un renversement des deux éléments,  et  du mot  nizna. Cf. *Zeitschrift*, 1881, p. 122, et 1885, p. 6.

[‡] Guérin, *Galilée*, t. ii., pp. 171–172.

le Koura, Kharbet el Kourah de Guérin* et de la carte anglaise, ait conservé le nom de Qartha, le ة final de l'arabe pouvant répondre au ת de קַרְתָּה. Kharbet el Kourah tiendrait assez bien sa place entre Loubbân et Méirôn, mais serait peut-être situé un peu haut pour la Qarta de Zabulon.

La section suivante du No. 13 au No. 16, nous transporte hors de Galilée. Je n'insisterai donc pas sur les noms qui la composent,  Dimasqou, Damas,  Adirou ou Adilou,  Aubil, Abila,  Hamatou, Hamath de la Gadarêne, si ce n'est pour dire que la comparaison d'Adilou avec Edréï que j'avais acceptée après De Rougé, en 1881,† va me paraît plus être possible. Le nom d'Edréï אֶדְרֶעִי, renferme un ע, qui n'est pas dans ; pour en avoir l'orthographe exacte, il faudrait une transcription semblable à celle du No. 91 de la liste de Thoutmos III, . Adirou est du reste, comme Brugsch l'a vu fort bien à propos du nom analogue de la liste de Sheshonq,‡ la contre-partie fidèle de l'hébreu אַדִּיר, *amplus, prægrandis, potens*, de la racine אדר.

Ici, comme dans plusieurs endroits des listes, une difficulté se présente: faut-il rattacher les Nos. 17 et 18  Iaqidoua,  Shamânaou au groupe de Damas ou au groupe qui commence (No. 19) avec Biérotou? Ce dernier renferme assez de noms faciles à retrouver sur le terrain pour qu'on puisse en reconstituer l'ensemble avec un certain degré de vraisemblance. Le No. 19   Biérotou, n'est certainement pas, comme le veut Mariette, le Beyrouth de Phénicie.§ Il faut le chercher dans les environs du lac de Tibériade. La Bible ne mentionne aucune בְּאֵרוֹת en ces parages, mais Josèphe, parlant des guerres des Hébreux contre les rois cananéens, nomme comme site de la bataille livrée dans les eaux de Mérom, "Berotha, ville de la Galilée supérieure, non loin de Kedesa," Kadesh de Nephtali.* Cette Berotha de Galilée doit répondre à la Bierotou de Thoutmos III., mais où la placer? Parmi les localités voisins de Kadesh, une seule offre des traces d'antiquités et un nombre de puits assez considérable pour expliquer l'origine du nom hébreu: c'est Aitharoun. "Ce village, adossé aux flancs d'une haute colline dont les pentes sont cultivées en oliviers, en vignes, et en figuiers, est habité par deux cents Métualis. Quelques citernes antiques pratiquées dans le roc leur fournissent encore une eau excellente. Quant à celle des nombreux puits qui ont été creusés au milieu d'une vast dépression circulaire du sol, située au bas du village, elle est amère, et elle sert seulement à abreuver les animaux, à laver et à arroser."† L'indice est malheureusement bien faible, et je ne m'en sers que faute de mieux. De toute façon, le voisinage de Biérotou et de Kadesh peut jeter quelque lumière sur la position de Iaqidoua et de Shamânaou. Il y a des chances pour qu'on soit autorisé à y reconnaître des localités de la Galilée supérieure, mais c'est tout ce qu'il est permis d'en dire pour le moment.

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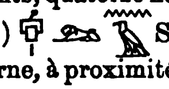
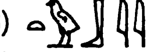
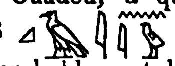
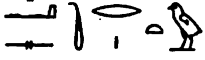
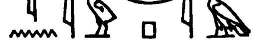
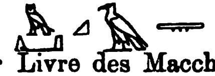
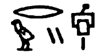
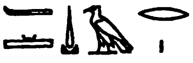
* Guérin, *Galilée*, t. ii., p. 90. L'identification proposé par Van den Velde avec el-Hartiéh, ne peut être admise, le ح arabe ne répondant pas au ק hébraïque.

† *Zeitschrift*, 1881, p. 123.

‡ Brugsch, *Geogr. Inschriften*, t. ii., p. 62.

§ Mariette, *Les Listes géographiques*, pp. 19-20.

Sur les vingt noms suivants, quatorze ne prêtent pas matière à discussion. Ce sont (No. 21)  Sarona, le שָׁרוֹן d'Isaïe (xxxiii. 9), le Sarôna moderne, à proximité du lac de Tibériade; (No. 22)  Toubi, probablement el-Taiyebéh, sur le Ouady Ouâdou, à quelque distance au sud de Sârôna; le No. 26  Qaïnaou, répond pour la forme à קָנָה et est probablement la Kana du Nouveau Testament; le No. 28,  Astiroutou, à עַשְׁתָּרוֹת, עַשְׁתְּרוֹת־קַרְנַיִם de la Batanée; le No. 29,  Ono-rapha, אוֹנוֹרְפָא à Raphôn, Raphana, Arpha, de la Décapole, aujourd'hui Er-râféh; le No. 30  Magato, à la Μαχέδ (Vulg. Mageth) du 1er Livre des Macchabées, aujourd'hui Moukatta ‡; le No. 31,  Louisa, et le No. 32,  Houzar à לַיִשׁ, לַיְשָׁה et חָצוֹר; le No. 34,

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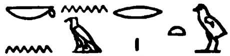
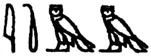
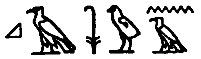
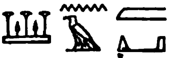
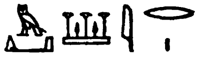
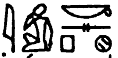
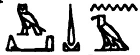
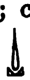
* Josèphe, *Arch.* 5, 1, 18; cf. G. Boettger, *Topographisch-historisches Lexicon zu den Schriften des Flavius Josephus*, pp. 55-56.

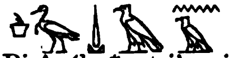
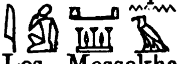
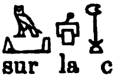
† Guérin, *Galilée*, t. ii., pp. 373-374.

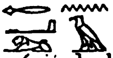
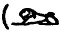
‡ E. de Saulcy, *Dictionnaire topographique de la Bible*, p. 216.

 Kinnarotou à כִּנֶּרֶת; le No. 36,  Adimim, à l'Adami אֲדָמִי de Nephtali, aujourd'hui ed-Damiéh; le No. 37,  Qasouna à קִשְׁיוֹן; le No. 38,  Shanama à שׁוּנֵם; le No. 39,  Mâshal, à מִשְׁאָל; et le No. 40  Aksaph à אַכְשָׁף.

Les six positions non déterminées sont :—

No. 20  Mâzana (cf. מָזוֹן, *cibus*, מָזוֹן, *pastus*, *pinguis*) ne répond à aucun nom connu ; celui de Madon מָדוֹן que propose Mariette ne renferme pas le  ז ou צ de l'égyptien.

No. 23,  Bizana, répond lettre pour lettre à el-Bizânéh,* et j'avais identifié les deux localités ; † mais cela nous reporterait trop loin au sud, vers Naplouse. D'autre part, un rapprochement avec Beçaânanîm,‡ outre qu'il est contraire à l'orthographe de l'Egyptien, nous ramènerait trop loin vers le nord, aux environs de Kadesh de Nephtali. Le nom de Bessoum, auquel on pourrait songer, n'a que la première lettre de commune avec celui de Bizana. Tout ce qu'il est permis d'admettre c'est que Bizana s'élevait probablement dans le massif de collines qui sépare le lac de Tibériâde de la plaine d'Esdraélon : c'est également la conclusion à laquelle je suis arrivé après avoir étudié le No. 24,  Amashna, et le No. 25,  Masakha. Les Messekha, Meskha que je trouve sur la carte, sont trop éloignées de la Galilée pour pouvoir être identifiées avec notre Masakha, Maskha.

La situation du No. 27  Arouna ou Alouna a une grande importance pour le récit de la campagne de Thoutmos III. contre Magidi. Notons d'abord que les deux transcriptions Arouna et Alouna que permet l'orthographe égyptienne ( = lou, rou) trouvent leur justification en hébreu : עֵרָן est un nom propre en variante de עֵר, et l'on a עֶלְיוֹן, *superior*. On peut donc défendre les deux transcriptions *Arouna* et *Alouna*. Cela dit, les cartes marquent dans la plaine d'Esdraélon, au nord de Djenîn, un village, d'Arranéh, dont l'orthographe arabe عرنة répond exactement à l'orthographe égyptienne Arouna : j'ai pensé un moment à identifier les deux localités, et Conder l'a fait sans hésitation.* Toutefois le récit de la campagne contre Mageddo ne se plie pas à cette hypothèse. L'armée du roi doit traverser des défilés avant d'arriver à Mageddo : dans la nuit du 19 au 20, l'armée campe à Alouna-Arouna ; la marche sur Mageddo se fait dans la journée du 20 ; commencée au lever du soleil, elle avait porté le roi au sud de la ville à la septième heure du jour. Le texte est malheureusement mutilé ; mais de ce qui en reste, on voit que, tandis que l'arrière garde égyptienne est encore à Alouna-Arouna, le gros de troupes *sort vers la vallée et remplit les défilés de la vallée.* L'opération était périlleuse, car tandis qu'elle s'exécute, les soldats s'exhortent à bien se soutenir au cas d'une attaque subite des gens du pays. Si on jette un coup d'œil sur la carte, on reconnaîtra que, d'Arranéh à Lejjûn, la route est toujours en plaine ou effleure les dernières ondulations de la montagne ; il faut donc renoncer au site d'Arranéh. L'ensemble des documents tels que je les ai étudiés ailleurs nous oblige d'ailleurs à chercher le tracé de la route à l'ouest et non à l'est de Taanak. M. de Saulcy, que ces considérations avait frappé, mettait Arouna-Alouna dans l'Ouady Arah, au bourg d'Ararah, mais ce bourg est trop éloigné de Lejjûn pour qu'une armée puisse franchir la distance qui sépare les deux villes en sept heures. Il faut donc ramener Arouna-Alouna plus près de Lejjûn, et, si nous nous rappelons que la lecture Alouna est possible, qu'elle nous ramène à un mot Elioun, qui signifie *le plus haut, le plus élevé,* nous sommes tentés de voir dans ce nom d'Alouna un nom significatif, emprunté à la position occupée par le village, et par suite à le chercher dans un site qui domine le pays entier. Le point qui répond le mieux à ces conditions est celui d'Oumm-el-Fahm, que Conder a si bien décrit dans ses rapports †: en partant de là, on trouve bien dans le coude subit du Ouady-Arah la vallée *que remplirent les soldats de Sa Majesté,* et une troupe marchant avec prudence, comme celle que nous représente le texte égyptien, peut gagner aisément en sept heures les bords du torrent auprès duquel est situé Lejjûn. Je lirai donc Alouna (Eliouna), et je chercherai l'emplacement de cette localité à Oumm-el-Fahm même ou dans le voisinage immédiat d'Oumm-el-Fahm.

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* *Palestine Expl. F.*, 1881, p. 201.

† *Zeitschrift*, 1885, p. 123.

‡ Reland, *Palæstina*, t. ii., p. 663 ; Neubauer, *Géographie du Talmud*, pp. 224-225.

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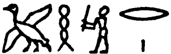
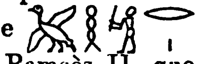
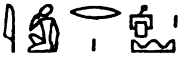
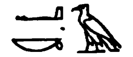
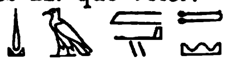
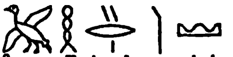
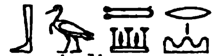
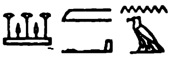
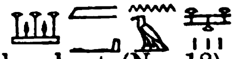
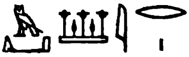
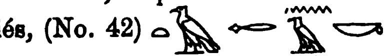
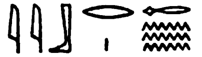
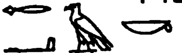
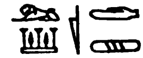
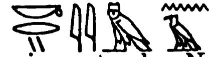
* *Palestine Expl. F.*, Quarterly Statement, October, 1880, p. 223.

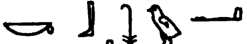
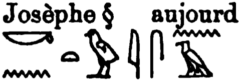
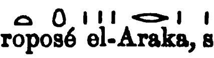
† *Pal. Expl. F.*, 1873, pp. 10 *sqq.*

Pour le No. 33  deux transcriptions sont également possibles, Pahil et Pahour. La première nous donne un nom identique au nom sémitique de Pella dans la Pérée פחל, l'autre nous ramène au mot פֶּחָר *figulus*, avec cette observation pourtant que la forme arabe فخار nous donne pour le son médial une valeur qui est rendue généralement en égyptien par ● plutôt que par . J'écarte tout d'abord le site de Pella, qui est trop loin vers le sud et de l'autre côté du Jourdain. La ville de  Pahour-Pahil est nommé dans une liste de Ramsès II. que voici :—  Arosa,  Ako,  Zamâit,  Pahiro,  Bitsharo, &c. Ici, le voisinage d'Ako nous indique pour Pahir un site Galiléen, celui de Bitsharo un site en Samarie. Un troisième document, le Papyrus Anastasi No. iv., nomme des objets en bois provenant de Pahiro. Tout cela prouve une certaine importance ; malheureusement la Bible ne nous a rien conservé qu'on puisse rapprocher de ce nom, et la nomenclature moderne n'est pas plus instructive que la Bible à cet égard. Ce n'est pas que les noms manquent où entre la racine فخار fokhâr : on a Râshayât el-Fokhar, Khourbét el Fakhourâ, Khourbét Fakhakhîr, &c., mais tout site antique peut recevoir des paysans un surnom formé d'une variante de فخار fokhâr, pourvu qu'il soit jonché de tessons. L'examen de la carte m'a suggéré une hypothèse que je donne pour ce qu'elle vaut. Pahir est placée entre Hazor et Laïs d'une part, entre Kinnéreth, Adami, Qishion de l'autre, c'est-à-dire entre les villes du lac Sammochonites et les villes du lac de Tibériade. La ville principale de cette région est Safed : Pahiro, Phahir, serait-il le nom qui précéda celui de Safed ? La position conviendrait fort bien aux données des monuments égyptiens.

Le nom  Shamâna (No. 35), identique sauf la partie idéographique à celui de  Shamânaou que nous avons rencontré plus haut (No. 18), est, comme De Rougé l'a vu depuis longtemps, le terme שֶׁמֶן, سامان, mais je ne trouve aucune Saman, Shemmân, Samnéh, dans les environs du lac de Tibériade. Enfin, la position de Misheal n'étant pas encore bien certaine, la position de son équivalent égyptien  Mâshal

(No. 39) entre Shounem et Aksaph ne nous permet guères de faire un choix entre les diverses localités proposées. Si Mâshal appartient au même groupe que Shounem, le village de Misiliéh, مسلية, au sud de Djenîn, pourra représenter la ville antique; s'il appartient au groupe d'Aksaph, c'est la ruine de Maisléh comme le veut Conder.* Cette seconde hypothèse me paraît être plus vraisemblable que la première. Les localités sont toujours groupées dans nos listes par deux ou trois, et si nous rattachions Mâshal à Shounem, Aksaph resterait isolée. J'adopte pour Aksaph le site proposé par Conder † à Tell-Yasif, non sans quelque doute: le site de el-Iksaf proposé par Robinson nous porterait en effet trop au nord.

Parmi les noms qui suivent, on peut considérer comme étant suffisamment identifiés, (No. 42)  Taânak; (No. 43)  Iablouâmou; יִבְלְעָם (No. 47)  Ako; (No. 48)  Rosh-Qodshou, ראשׁקדשׁ, *le cap sacré* ou *la cime sacré*, la ville de Haïpha; (No. 49)  Kalimana, Calamon. ‡ Toute la série comprise entre les Nos. 41 et 49 était, comme on voit, alignée le long du Carmel, et cette observation nous permet de classer presque certainement les points intermédiaires, dont l'identification n'est pas évidente du premier coup.

(No. 41)  Gebâ-Souân, est une des nombreuses Gebâ, probablement ici, Γαβὰ πόλις ἱππέων de Josèphe § aujourd'hui Sheikh-Abréik. || Le No. 43  Ganôtou-Asnah, ¶ les jardins d'Asnah, אַסְנָה étant un nom d'homme (*Esdras*, ii. 50), est probablement une désignation nouvelle de En-gannim, Beth-hag-gân, Γιναία, Djenîn. Pour  Routiou (Loutiou) Aroka (Aloka) j'avais proposé el-Araka, sur le versant septen-

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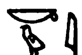
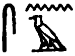
* *Pal. Expl. F.*, 1883, p. 136

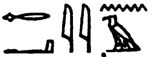
† *Pal. Expl. F.*, 1881, pp. 49-50.

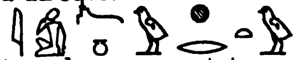
‡ *Zeitschrift*, 1879, p. 54-55.

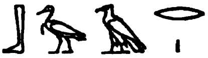
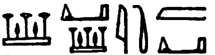
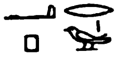
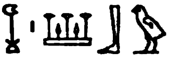
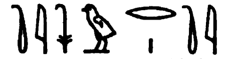
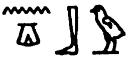
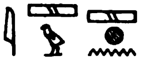
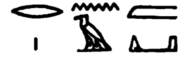
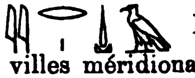
§ *Bell. Jud.*, 2, 18, 1; 3, 3, 1.

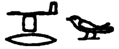
|| Guérin, *Galilée*, t. ii., pp. 395-397.

¶ La variante de Mariette (*Les Listes géographiques*, pp. 26-27)   est une erreur de copie; cf. *Recueil de Travaux*, t. vii., p. 94 sqq.

trional du Carmel, entre Djenîn et Taânak.* Il me semble que la première partie Loutiou (Loudiou) nous permet de proposer Loudd, dans la plaine même, sur la rive méridionale du Nahr Moukatta, un peu au nord de Lejjûn. Le No. 46  Aina est entre Loudd et St. Jean d'Acre, mais sans qu'on puisse affirmer auquel des nombreux endroits dont le nom commence par Aïn il correspond; j'inclinerai pourtant en faveur du Tell-Kardanéh, au pied duquel les Oyoun el-Bass donnent naissance au Nahr-Namân.

Des derniers noms qu'on peut rattacher à la Galilée un seul a un équivalent certain dans l'onomastique de la Bible (No. 52)  Anoukharotou, אֲנָחֲרַת, dans lequel tous les commentateurs récents s'accordent, peut-être à tort, à reconnaître le village d'En-naourah.

Les autres sont:—(No. 50)  Biar, Bir; (No. 51),  Shemesh-Adouma; (Nos. 53 et 54)  Apourou-Apoulou; (No. 55)  Khashbou; (No. 56)  Tisouroti; (No. 57)  Nekabou; (No. 58)  Ashou-Shokhn, et peut-être (No. 59)  Ronamâ. Avec le No. 60  Iourza, commence certainement la liste des villes méridionales.

S'il faut chercher Biar, Bir, dans le voisinage d'Anoukharotou, ainsi que son rang dans la liste le permet, la position de el-Biréh sur le Ouady Biréh conviendra comme son et comme position. Pour Shemesh-Adouma (שֶׁמֶשׁ־אֲדוֹם), si l'on admet que la première partie ait pu tomber, on sera porté à la rapprocher de l'Adamah אֲדָמָה de Nephtali (Josué xix. 36), dont la position est malheureusement incertaine. Khirbét Admah cadrerait assez bien avec le rang que Shemesh-Adouma occupe dans la liste égyptienne: Khirbét-Admah, sans être en effet dans le voisinage immédiat d'En-naourah, n'en est pas assez éloignée cependant pour qu'on puisse l'écarter avec assurance. Les deux  Apourou-Apoulou, nous montrent deux villes du même nom placées à côté l'une de l'autre. Les deux lectures Apoulou et Apourou sont possibles : l'une représente עֹפֶל, *tumulus, clivus,* l'autre עֹפֶר *hinnulus cervæ.* Les Égyptologues ont toujours adopté jusqu'à présent la leçon Apourou, et cela les a conduit à voir dans les deux Apouro, les deux Ophrah עָפְרָה de la Bible, ce qui a l'inconvénient de nous reporter trop au sud de la Galilée. En adoptant la lecture Apoulo et Aphoulo (Ophel), on trouve en pleine Galilée deux villages voisins l'un de l'autre, dont le nom présente une assonance très suffisante pour rappeler les deux noms identiques de la liste égyptienne, el-Afouléh et Fouléh.

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* *Zeitschrift*, 1881, p. 126.

Le groupe suivant Khashbou, Tisouroti, Nekabou, Ashou-Shokhn a été généralement placé au-delà du Jourdain, dans des régions où les Pharaons n'ont jamais pénétré : l'unique raison que j'en trouve c'est le rapprochement établi à tort entre la Khashbou des Egyptiens et Kheshbôn חֶשְׁבּוֹן des Ammonites. La place qu'elle occupe sur la liste de Thoutmos III. entre Anoukharoto. et Iourza nous obligerait pourtant à faire des recherches soit en Galilée, soit en Judée, nullement dans la Pérée. Le rapprochement très vraisemblable de Nekabou avec la Nekeb נֶקֶב de Nephtali (Josué xix. 33) me décide pour la Galilée, et les autres noms ne contredisent pas cette hypothèse. Nekeb est Khirbet Séiyâdèh, ainsi que cela résulte de la glose Talmudique qui rend Hannekeb par Ziadatha ציידתא : * le nom de Lonamâ (cf. לֵנִים de לוּן) se retrouve probablement dans les ruines voisines de Tell-en-naâm, où le procédé de transformation moderne est analogue à celui qui a changé Odullam en Aïd-el-ma. La localité Ashou-Shokhn donne lieu à une conjecture bien séduisante. Son nom se transcrit naturellement אשׁוּשְׁחַן, et la première partie en correspond au nom de la ville de Ousha אושא, célèbre chez les Juifs de l'époque chrétienne : Ashou-Shokhn serait-il la forme pleine du nom talmudique ? Pour Tisouroti et pour Khashbou, je n'ai rien à proposer.

Telles sont les observations que m'a suggérées une longue étude des listes. J'ai donné ailleurs la justification de mes transcriptions :† j'ai essayé d'apporter à mes identifications la même prudence que j'ai mise à nos transcriptions. Les noms énumérés se classent presque tous dans les régions qui entourent Mageddo ; Qodshou, Damas et deux ou trois autres villes à peine appartiennent à des contrées relativement lointaines. Ce résultat, auquel m'a conduit l'étude indépendante des listes, ressort clairement de l'histoire de la campagne telle que nous la fait connaître l'inscription de Karnak. En l'an xxiii., Thoutmos III. parti de Gaza, franchit le Carmel, battit les confédérés, y compris le prince de Qodshou, sous les murs de Mageddo, assiègea la ville et la prit, puis retourna en Égypte sans pousser plus loin vers le nord. Le chute de Mageddo était décisive, car, ainsi que Thoutmos III. le fait observer lui-même, "Tout chef de tout pays [est enfermé] en elle, si bien que c'est prendre mille villes que la prise de Magidi": la guerre terminée, il "réinstalla les chefs en leur dignité," à condition qu'ils payassent le tribut. Le fort de la campagne avait donc porté sur la plaine d'Esdraélon: les troupes égyptiennes y avaient séjourné longuement, et en avait pillé tout le pourtour, non sans pousser quelques pointes à distance. Au retour, quand Thoutmos III. construisit le pylone de Karnak, du butin de cette campagne, il inscrivit sur la muraille le nom des villes qu'il avait saccagées et qui avaient contribué involontairement à l'achèvement de l'édifice. Le mur était large, et il fallait le couvrir en entier, on prit pêle-mêle tous les noms de Galilée et de la Syrie méridionale qu'on connaissait, sans s'inquiéter de l'importance de la ville elle-même: un nom en valait un autre pour la circonstance.

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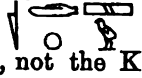
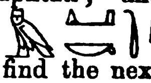
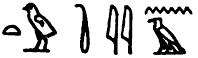
* Reland, *Palæstina,* t. ii., p. 717 ; Neubauer, *Géographie du Talmud,* p. 225 ; *Palest. Expl. F.*, 1881, p. 54, article de Conder.

† *Zeitschrift,* 1881, pp. 119-131.

ON THE GEOGRAPHICAL NAMES OF THE LIST OF THOTHMES III., WHICH MAY BE REFERRED TO GALILEE. By G. Maspero. (Translated from the French by Henry George Tomkins.)

I HAVE nothing to say of the first two numbers of the list, except that  Qodshu, is to me the Qodshu on the Orontes, not the Kadesh of Naphtali;* and that, despite the authority of Conder,† I place  Mâgidi, at Lejjun, at the foot of Carmel. To find the next name whose identification is certain, we must go down to No. 9:  Dutina, is certainly the Dothaïn of Gen. xxxvii. 17, דֹּתַיְן, for which 2 Kings vi. 13, gives us a

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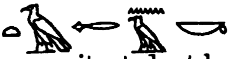
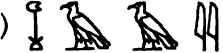
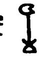
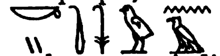
* Mariette, *Les Listes géographiques des Pylones de Karnak*, pp. 12–13.

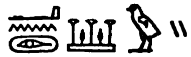
† *Palestine Exploration Fund*, 1881, pp. 86–88, 232–234, 319–322.

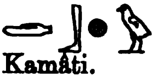
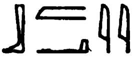
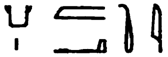
form דֹּתָן nearer to the hieroglyphic spelling. According to the analogies of the rest of the list, it is then between Lejjun and Tell Dôthân that we should seek the position of the six intermediate places, but should we look to the districts north of Carmel, or south? The places situated on the north are enumerated in the list about No. 42, around  Taânak; it is likely then that Nos. 3–8 were situated, at least some of them, on the southern side.

The first of these towns (No. 3)  Khaaï, answers very exactly to the word חַוָּה, *a village*. I only know one place whose name precisely resembles Khaaï—it is Deir el Haua; but I do not know a case where the hard sound of  ח is rendered in Arabic by ه, and that alone is enough to make me reject the identification. Neither should we recognise here, despite the resemblance, the Hivites of the Bible: the Hivites are a people, and Khaaï is a town.

The next number  Gît-Suna, perhaps will permit us in a general way to indicate the point of the compass towards which we should seek Khaaï. Gît-Suna, transcribed גַּת־סוּן or גַּת־שׁוּן, is one of the many names beginning with the element גַּת; if the second part has fallen away, as is sometimes the case in composites, Gît-Suna will be one of the many Djetts that we meet with on the map of Palestine. The Djett which will fit well enough here is that which is near the Wady Abu-Nâr, not far from the chief route which leads from Kakôn to Lejjun.* If we admit this identification, Khaaï should be placed somewhere in the Wady Arah, perhaps towards Khan ez-Zébadnéh, at the point where the roads separate.

The numbers that follow are equally uncertain.

I have assimilated the second element of  An-Shauï to שָׁאָה, שׁוֹא, *to make a noise, to crash*, or to שָׁוָה, Chald. שְׁוָא, *to be even, level*, so that An-Shauï might well mean *the noisy fountain*, or *the fountain of the plain*.

There was in the territory of Judah a valley of similar name עֵמֶק שׁוֵה, where the Rabbins prefer for שׁוֵה, the sense *to agree.*[*] Whatever these etymologies may import, An-Shauï must be situated like Djett and Tell Dothân, to the right or left of Wady Abu-Nâr (Wady Selhab), and it is in the same direction that we may expect to meet with  Dibkhu,  Bumâï, and  Kamâti.

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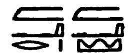
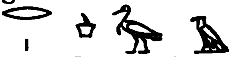
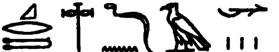
* This identification has been proposed by Conder, *Pal. Expl. F.*, 1876, p. 63.

Dothain is parted from  Mâromâ, which by general consent is Merom, by two names (No. 11)  Rubina or Lubina, and (No. 12)  Kart-Nizanau, the town of flowers.[†] The former of these two towns has been identified by De Rougé and by Mariette with לִבְנָה Lebnah of Judah, or with לְבוֹנָה Lebonah of Samaria; by Conder with the לִבְנַת Λαβανάθ of Galilee. Taking all into account, it seems to me preferable to attach Lubina, and consequently Qart-Nizanau, to the group to which Merom belongs. Lubina will then find its equivalent in Kharbet Lûbbân, Kharbet Lobbûna, which is situated at some distance from Ras en-Nakûrah, nearly in sight of the sea.[‡] The site of Qart-Nizanau קֶרֶת־נִצָּן, is still less easy to guess than that of Lubina.

I should not be indisposed, however, to conjecture that the קַרְתָּה of Zabulon (Jos. xxi. 34) is identical with our town: if we may suppose that Gath is a shortened form of the full name Gath-Rimmon, we may admit that Qarta is the abbreviation of Qart-Nizanau. Unhappily the situation of Qarta is anything but certain, and so is that of מֵרוֹם Merom, although the Greek transcription, Μεῤῥάν, Μεῤῥών, seems to give warrant to the scholars who propose to see in this last town the existing village of Meirôn.

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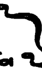
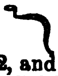
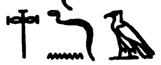
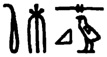
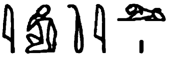
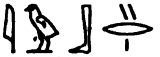
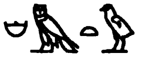
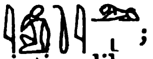
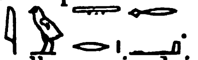
[*] Reland, *Palæstina*, t. i., pp. 356–357; Neubauer, *Géographie du Talmud*, pp. 50–51.

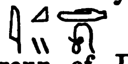
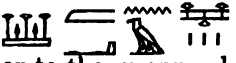
[†] The reading Kiriath-Sannah of De Rougé and Mariette admits an impossible transcription of ש by , a transposition of the two elements and  of the word  nizma. Cf. *Zeitschrift*, 1881, p. 122, and 1885, p. 6.

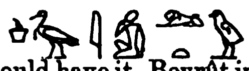
[‡] Guérin, *Galilée*, t. ii., pp. 171–172.

It is not impossible however that the Kura, Kharbet el Kourah of Guérin and of the English map, has preserved the name of Qartha, the ة final of the Arabic answering perhaps to ת of קָרְת.

Kharbet el Kourah will hold its place well enough between Lubbân and Meirôn, but it will be situated perhaps a little too high for Qarta of Zabulon.

The following section, No. 13 to No. 16, takes us out of Galilee. I will not then dwell on the names which compose it  Dimasqu, Damascus,  Adiru or Adilu,  Aubil, Abila,  Hamatu, Hamath of Gadarene, except to say that the comparison of Adilu with Edreï which I accepted after De Rougé in 1881,* no longer seems possible to me. The name of Edreï אֶדְרֶעִי contains an ע which is not in ; to have its exact orthography we need a transcription like that of No. 91 in the list of Thothmes III. . Adiru, is moreover, as Brugsch has very well perceived in connexion with the analogous name in the list of Sheshonq,† the true counterpart of the Hebrew אַדִּיר, *large, very great, mighty,* from the root אָדַר.

Here, as in many places in the lists, a difficulty occurs: must we attach Nos. 17 and 18  Iaqidua,  Shamânau to the group of Damascus or to the group which begins (No. 19) with Bierotu? This last includes many names easy to find in the district where we may recover the whole group with a certain degree of likelihood.

No. 19  Bierotu is certainly not, as Mariette would have it, Beyrût in Phœnicia.‡ We must seek it in the neighbourhood of the lake of Tiberias. The Bible does not mention any בְּאֵרוֹת in these parts, but Josephus, speaking of the wars of the Hebrews against the Canaanites, names as the scene of the battle fought at the waters of Merom, " Berotha, a town of Upper Galilee, not far from Kedesa," Kadesh of Naphtali.* This Berotha of Galilee should answer to the Bierotu of Thothmes III., but where are we to place it? Among the localities near Kadesh one only offers traces of antiquity and a number of wells considerable enough to explain the origin of the Hebrew name: it is Aitharûn. " This village, leaning against the sides of a high hill whose slopes are cultivated for olives, vines, and fig-trees, is inhabited by two hundred Metawalis. Some ancient cisterns wrought in the rock furnish them still with excellent water. As for that of many wells that are dug in the midst of a vast circular depression of the ground, situated at the bottom of the village, it is bitter, and serves only to water the animals, for washing, and for irrigation."† The traces are unhappily very faint, and I only notice them for want of better. At any rate, the neighbourhood of Bierotu and of Kadesh may throw some light on the position of Iaqidua and of Shamâuau. We are warranted by some probabilities in recognising here localities in Upper Galilee, but this is all that we are are permitted to say at present.

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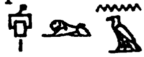
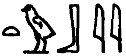
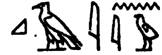
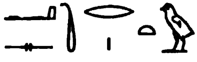
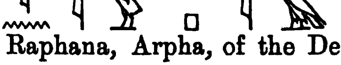
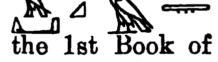
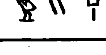
* *Zeitschrift*, 1881, p. 123.

† Brugsch, *Geogr. Inschriften*, t. ii., p. 62.

‡ Mariette, *Les Listes géographiques*, pp. 19–20.

Of the twenty following names fourteen present no material for discussion. These are (No. 21)  Sarona, the שָׁרוֹן of Isaiah xxxiii. 9, the modern Sarôna, very near the lake of Tiberias; (No. 22)  Tûbi, probably el-Taiyibeh on the Wady Wâdû, at some distance to the south of Sârôna; (No. 26)  Qaïnau answers in form to קָנָה and is probably the Kana of the New Testament; No. 28,  Astirutu, to עַשְׁתָּרוֹת, עַשְׁתְּרוֹת קַרְנַיִם of Batanæa; No. 29,  Ono-rapha, אוֹנוֹרָפָא to Raphôn, Raphana, Arpha, of the Decapolis, the present Er-râfeh; No. 30  Maqato, to the Μαχέδ (Vulg. Mageth) of the 1st Book of Maccabees, the present Mûkatta ‡; No. 31,  Luisa, and No. 32,

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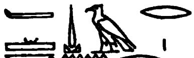
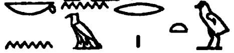
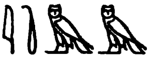
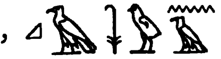
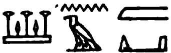
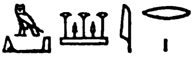
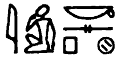
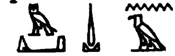
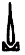
*Josephus, *Arch.* 5, 1, 18; cf. G. Boettger, *Topographisch-historisches Lexicon zu den Schriften des Fl. Josephus*, pp. 55–56.

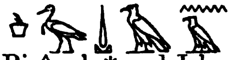
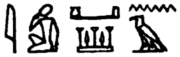
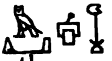
† Guérin, *Galilée*, t. ii., pp. 373-374.

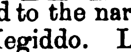
‡ E. de Saulcy, *Dictionnaire topographique de la Bible*, p. 216.

 Huzar to לַיִשׁ, לַיְשָׁה, and חָצוֹר; No. 34,  Kinnarotu to כִּנֶּרֶת; No. 36,  Adimim, to the Adami אֲדָמִי of Naphtali, the present ed-Damieh; No. 37,  Qasuna to קִשְׁיוֹן; No. 38,  Shanama to שׁוּנֵם; No. 39,  Mâshal, to מִשְׁאָל; and No. 40  Aksaph to אַכְשָׁף.

The six positions not determined are:—

No. 20  Mâzana (cf. מָזוֹן, food, מָזוּן, fed, fat) does not answer to any known name; that of מָדוֹן Madon, which Mariette proposes, does not contain the  ז or צ of the Egyptian.

No. 23,  Bizana, answers, letter to letter, to el-Bizâneh,* and I have identified the two localities,† but that brings us too far to the south, towards Nablûs. On the other hand a comparison with Beçaânanîm,‡ besides being contrary to the Egyptian orthography, brings us too far to the north, to the neighbourhood of Kadesh of Naphtali. The name of Bessûm, of which we might think, has only the first letter in common with that of Bizana. All that we may admit is that Bizana probably lay high in the mass of hills which separates the lake of Tiberias from the plain of Esdraëlon: this is also the conclusion at which I have arrived after studying No. 24,  Amashna, and No. 25,  Masakha. The Masakhas, Meskhas that I find in the map are too far from Galilee to be possibly identified with our Masakha, Maskha.

The situation of No. 27  Âruna or Âluna has great importance with regard to the narrative of the campaign of Thothmes III. against Megiddo. Let us first mark that the two transcriptions, Âruna or Âluna which the Egyptian spelling permits (𓃭 = lu, ru) find their justification in Hebrew: עֵרָן as a proper name is a variant of עֵר, and we have also for it עֶלְיוֹן, higher. We may then defend the two transcriptions Âruna and Âluna. With this proviso we notice on the maps in the plain of Esdraëlon, north of Djenîn, a village of Arraneh, whose Arabic orthography عرنة answers exactly to the Egyptian orthography Âruna: I thought for a moment to identify these two localities, and Conder has done so without hesitation.* Yet the narrative of the campaign against Mageddo will not fit this hypothesis. The king's army must pass through defiles before reaching Megiddo: in the night of the 19th, 20th, the army encamped at Aluna-Aruna; the march on Mageddo was made on the 20th day; begun at sunrise, it had brought the king to the south of the town by the seventh hour of the day. The text is unhappily mutilated; but from what remains we see that, while the Egyptian rear-guard is still at Aluna-Aruna, the main force issues into the valley and fills the defiles of the valley. The operation was dangerous, for while it was in execution the soldiers exhorted one another to stand firm in case of sudden attack from the people of the country. If we cast a glance on the map we perceive that from Arraneh to Lejjûn the route is always level or skirts the last undulations of the hill-country; we must therefore give up the site of Arraneh. The whole result of the documents which I have elsewhere studied obliges us moreover to seek the track of the route to the west and not to the east of Taânak. M. de Saulcy, who had been struck by these considerations, places Aruna-Aluna in the Wady Arah, at the town of Ararah, but this town is too remote from Lejjûn for an army to clear the distance that separates the two towns in seven hours. We must therefore, bring Aruna-Aluna nearer to Lejjûn, and, if we remind ourselves that the reading Aluna is possible, and that it leads us to a word Eliûn, which means *the most high, the most exalted,* we are tempted to see in this name of Aluna a significant name borrowed from the position occupied by the village, and consequently to seek for it in a situation which commands the whole country. The point which answers best to these conditions is that of Um-el-Fahm, which Conder has so well described in his reports.† On setting out thence we find readily in the abrupt angle of the Wady Arah the valley *which the soldiers of his Majesty filled,* and one troop, marching with prudence, like that which the Egyptian text brings before us, might easily reach in seven hours the banks of the torrent near which Lejjûn is situated.

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* *Palestine Expl. F.*, 1881, p. 201.

† *Zeitschrift*, 1885, p. 123.

‡ Reland, *Palæstina*, t. ii., p. 663; Neubauer, *Géographie du Talmud*, pp. 224, 225.

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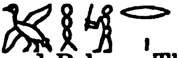
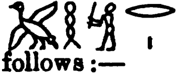
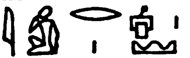
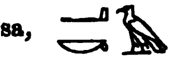
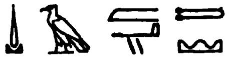
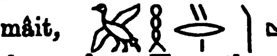
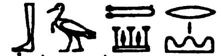
* *Palestine Expl. F.*, Quarterly Statement, October, 1880, p. 223.
† *Pal. Expl. F.*, 1873, pp. 10 *et seq.*

I will read then Aluna (Eliûna), and I will seek the site of this place at Um-el-Fahm itself, or in the immediate vicinity of Um-el-Fahm.

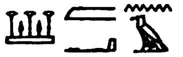
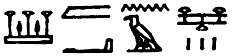
For No. 33  two transcriptions are equally possible, Pahil and Pahur. The first gives us a name identical to the Semitic name of Pella in Peræa פחל, the other brings us to the word פֶּחָר, a potter, with this observation, however, that the Arabic form فخار gives us for the middle sound a value which is generally rendered in Egyptian by 𓐍 rather than by 𓎛. I dismiss at once the site of Pella, which is too far to the south, and on the other side of Jordan. The town of  Pahur-Pahil is named in a list of Ramses II., as follows:—

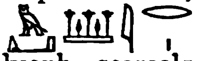
 Arosa,  Ako,  Zarmâit,  Pahiro,  Bitsharo, &c. Here, the vicinity of Ako points out to us a Galilean situation for Pahir, that of Bitsharo, a situation in Samaria.

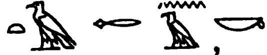
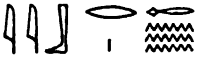
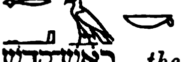
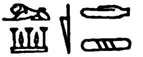
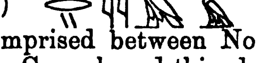
A third document, Papyrus Anastasi No. iv., mentions articles of wood coming from Pahiro. All this proves a certain importance; unhappily the Bible has preserved for us nothing that can be compared with this name, and modern nomenclature is no more instructive in this matter than the Bible. It is not that names are lacking into which the root فخار fokhâr, enters: we have Rashayât el-Fokhâr, Khurbet el Fakhûrâ, Khurbet Fakhakhîr, &c., but any ancient site might receive from the country folk a surname formed of a variant of فخار fokhâr, provided that it is strewn with potsherds.

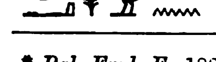
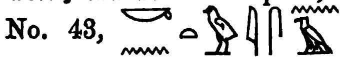
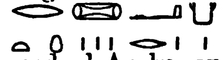
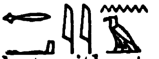
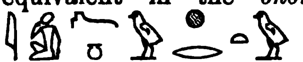
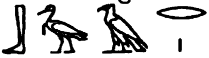
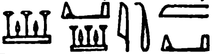
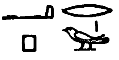
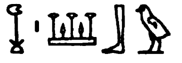
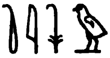
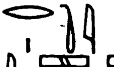
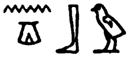
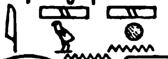
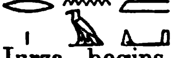
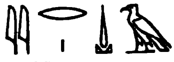
An examination of the map has suggested to me a hypothesis which I give for what it is worth. Pahir is placed between Hazor and Laïs in one direction, between Kinnereth, Adami, Kishion, in the other; that is to say, between the towns of Lake Sammochonites and the towns of the Lake of Tiberias. The principal town of this region is Safed: can

Pahiro, Phahir, have been the name which preceded that of Safed? The position will agree very well with the data of the Egyptian monuments.

The name  Shamâna (No. 35), identical except the ideographic part with that of  Shamânau, which we have met with above (No. 18), is, as De Rougé saw long ago, the word שֶׁמֶן, لمان, but I cannot find any Saman, Shemmân, Samneh, in the neighbourhood of the Lake of Tiberias.

Lastly, the position of Misheal not being yet quite certain, the position of its Egyptian equivalent  Mâshal (No. 39), between Shunem and Aksaph scarcely permits us to make choice between the different proposed localities. If Mâshal belongs to the same group as Shunem, the village of Misilieh, مسليه, to the south of Djenîn, may represent the ancient town; if it belongs to the group of Aksaph, it is the ruin of Maisleh, as Conder will have it.* This second hypothesis appears to me more likely than the first. The places are always grouped in our lists by twos or threes, and if we attach Mâshal to Shunem, Aksaph will remain isolated. I adopt for Aksaph the site proposed by Conder† at Tell-Yasif, not without some doubt; the site of el-Iksaf proposed by Robinson carries us in fact too far to the north.

Among the names that follow, we may consider as sufficiently identified, (No. 42)  Taânak; (No. 43)  Iabluâmu; יִבְלְעָם (No. 47)  Ako; (No. 48)  Rosh-Qodshu, ראשקדש, *the sacred cape*, or *the sacred ridge*, the town of Haïfa; (No. 49)  Kalimana, Calamon.‡ All the series comprised between Nos. 41 and 49 was, as we see, aligned along Carmel, and this observation permits us to arrange almost certainly the intermediate points whose identification is not evident at the first glance.

(No. 41)  Gebâ-Suân, is one of the many Gebâs, here probably Γαβὰ πόλις ἱππέων of Josephus,* the present Sheikh-Abreik.† No. 43,  Ganôtu-Asnah,‡ the gardens of Asnah, אָסְנָה being a man's name (Esdras, ii. 50), is probably another designation of En-gannim, Beth-hag-gân, Γιναία, Djenîn. For  Rutiu (Lutiu), Aroka (Aloka), I have proposed el-Araka, on the northern slope of Carmel, between Djenîn and Taânak. It seems to me that the first part Lutiu (Ludiu) permits us to propose Ludd, in the same plain, on the south bank of the Nahr Mukatta, a little to the north of Lejjûn. No. 46  Aina is between Ludd and St. Jean d'Acre, but without the power of establishing to which of the many sites whose name begins with Aïn it corresponds, I am inclined to prefer Tell-Kardaneh, at whose foot the Oyûn-el-Bass give birth to the Nahr-Namân. Of the latter names that we may attach to Galilee one alone has a sure equivalent in the *onomasticon* of the Bible (No. 52)  Anukharotu, אֲנָחֲרָת, in which all recent commentators agree, perhaps wrongly, to recognise the village of En-naûrah. The others are: (No. 50)  Biar, Bir; (No. 51),  Shemesh-Aduma; (Nos. 53 and 54),  Apuru-Apulu; (No. 55),  Khashbu; (No. 56),   Tisoroti; (No. 57),  Nekabu; (No. 58),  Ashu-Shokhn, and perhaps (No. 59),  Ronamâ. With No. 60,  Iurza, begins certainly the list of southern towns.

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* *Pal. Expl. F.*, 1883, p. 136.

† *Pal. Expl. F.*, 1881, pp. 49-50.

‡ *Zeitschrift*, 1879, pp. 54-55.

If we must seek seek Biar, Bir, in the vicinity of Anukharotu, as its place in the list permits, the position of el-Bireh on the Wady Bireh will suit for sound and for

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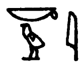
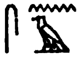
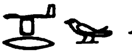
* *Bell. Jud.*, 2, 18, 1; 3, 3, 1.

† Guérin, *Galilée*, t. ii., pp. 395-397.

‡ The variant of Mariette (*Les Listes géographiques*, pp. 26-27)   is an error in copying: cf. *Recueil de Travaux*, t. vii., p. 94 *seq.*

position. For Shemesh-Aduma (שֶׁמֶשׁ־אֱדוֹם), if we admit that the former part may have fallen away, we are led to compare Adamah אֲדָמָה of Naphtali (Jos. xix. 36), whose position is unhappily uncertain. Khirbet-Admah will fall in well enough with the place which Shemesh-Aduma occupies in the Egyptian list: Khirbet-Admah, without being in fact in the immediate vicinity of En-naûrah, is yet not so far removed that we may dismiss it with certainty. The two  Apurus-Apulus show us two towns of the same name placed beside one another. The two readings Apuru and Apulu are possible: the one represents עֹפֶל, a mound, a knoll, the other עֹפֶר, a fawn. Egyptologists have hitherto always adopted the reading Apuru, and that has led them to see in the two Apurus the two Ophrahs עָפְרָה of the Bible, which has the inconvenience of carrying us too far to the south of Galilee. In adopting the reading Apulu and Aphulu (Ophel) we find right in Galilee two villages near one another whose name presents an assonance quite sufficient to recall the two identical names of the Egyptian list, el-Afûleh and Fûleh.

The following group, Khashbu, Tisuroti, Nekabu, Ashu-Shokhn, has been generally placed beyond Jordan, in the regions where the Pharaohs never penetrated: the only reason I can find is the mistaken comparison between the Khashbu of the Egyptians and Kheshbon חֶשְׁבּוֹן of the Ammonites. The place which it occupies in the list of Thothmes III. between Anukharotu and Iurza will oblige us however to search either in Galilee or in Judæa, not at all in Peræa. The very probable comparison of Nekabu with the Nekeb נֶקֶב of Naphtali (Jos. xix. 33) decides me for Galilee, and the other names do not contradict this hypothesis. Nekeb is Khirbet Seiyâdeh, which results from the Talmudic gloss which renders Hannekeb by Ziadatha צידתא.* The name of Lonamâ (cf. לְנִים from לוּן) is recovered probably in the neighbouring ruins of Tell-en-Naâm, where the process of modern transformation is analogous to that which has changed Adullam into Aïd-el-ma. The locality Ashu-Shokhn gives rise to a very tempting conjecture. Its name is naturally transcribed אשוֹשָׁחַן, and the former part corresponds with the name of the town of Usha אושא celebrated among the Jews of the Christian epoch: Is Ashu-Shokhn the full form of the Talmudic name?

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* Reland, *Palæstina*, t. ii., p. 717; Neubauer, *Géographie du Talmud*, p. 225; *Palest. Expl. F.*, 1881, p. 54, article by Conder.

For Tisuroti and Khashbu I have nothing to propose.

Such are the observations which a long study of the lists has suggested to me. I have elsewhere given the justification of my transcriptions:* I have endeavoured to bring to my identifications the same prudence that I have exercised in my transcriptions. The names enumerated arrange themselves almost wholly in the districts that surround Megiddo; Qodshu, Damascus, and two or three other towns at most belong to countries comparatively remote. This result, to which the independent study of the lists has led me, arises clearly from the history of the campaign as the inscription at Karnak makes it known to us. In the year xxiii. (of his reign), Thothmes III. set out from Gaza, cleared Carmel, beat the confederates, including the prince of Qodshu, under the walls of Megiddo, besieged and took the town, then returned to Egypt without pushing farther on towards the north. The fall of Megiddo was decisive, for, as Thothmes III. has himself observed, "Every chief of the whole country [was shut up] in it, so that the capture of Megiddo was as good as the taking of a thousand towns:" when the war was finished he "reinstalled the chiefs in their dignity" on condition that they should pay tribute. The stress of the campaign fell thus on the plain of Esdraëlon: the Egyptian troops had long remained there and had pillaged all the district round, not without pushing on to some distant points. On his return, when Thothmes III. built the pylon of Karnak with the booty of this campaign, he inscribed on the wall the names of the towns that he had sacked and which had unwillingly contributed to the completion of the edifice. The wall was large, and must be entirely covered. They took indiscriminately all the names of Galilee and Southern Syria that they knew, without troubling about the importance of the town itself: one name did as well as another for that matter.

Bûlaq, 20 *November*, 1885.

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* *Zeitschrift*, 1881, pp. 119-131.

The CHAIRMAN (the Rev. W. WRIGHT, D.D.).—I am sure we all acknowledge the debt of gratitude due to M. Maspero for his most valuable paper, and at the same time desire to accord our thanks to the Rev. H. G. Tomkins for his able translation, and the obligation we are under to the reader. I now call upon the honorary secretary to read the communications received from those unable to be present.

Captain FRANCIS PETRIE said: Letters have been received expressing regret at being unable to be present from the Right Honourable Sir H. A. Layard, Sir Henry Barkly, K.C.B.; Sir G. Grove; Sir Charles Warren, G.C.M.G.; Mr. E. A. W. Budge, of the British Museum; Mr. Robert Cust, and the Rev. A. Edersheim, D.D.; most of these specially refer to the great value of M. Maspero's paper.

The translator of the paper also writes :—

"Park Lodge, Weston-super-Mare, *April* 30, 1886.

" In translating for the Institute Professor Maspero's very valuable paper, I have adopted the more usual English manner of spelling the geographical names and terms, instead of the French equivalents.

"I am very sorry I cannot be present to join personally in the discussion.

" It is by bringing the special learning of the accomplished Egyptologist and historian to bear on the results of the survey that we can slowly gain the trustworthy knowledge we desire.

" I have not had time to study the Galilean part of the lists of Thothmes with the care that I have bestowed on the portion which gives us the names of towns in Northern Syria.

" But it is clear that M. Maspero has set us far in advance of the identifications proposed by the lamented Mariette; and, having followed step by step his partial suggestions in the Egyptian *Zeitschrift* and elsewhere, I now hail with great pleasure the grouping of this more extended treatment of the Galilean district.

"Only those who have been accustomed to the intricacies and tentative progress of this kind of work can do justice to the results before us, or share the pleasure that they afford. The student who would set these lists of tributary places in the light of history should compare the paper which M. Maspero has so courteously contributed with the fourth edition (lately published) of his admirable *Histoire Ancienne des Peuples de l'Orient.* (Paris: Hachette & Cie. 1886.)

" In the hope of soon studying with care and in detail these topographical groups as they fall into their places in the whole geography of Palestine and Syria, I will only now testify the gratitude which England owes to the generous spirit displayed by the learned Director-General of Egyptian Archæology, who welcomes the labours of authorised explorers in connexion with our English Committee, and is equally earnest in doing justice to the achievements of our great survey of Palestine.

" Ever yours, very sincerely,

"HENRY GEORGE TOMKINS.

" Captain Francis Petrie,
" Hon. Sec., Victoria Institute."

Captain Claude Reignier Conder, R.E., so well known for his labours in connexion with the exploration of Palestine, writes as follows :—

"2, Grafton Villas, New Brompton, Chatham,
"*2nd May*, 1886.

"I beg to thank the Council of the Victoria Institute for their kind invitation and recognition of my work.

"I have not got my revised paper on the Lists of Karnak with me. I have put down such suggestions as occur to me, and find that M. Maspero agrees with me as to the district in which the names lie, and, in twenty cases out of sixty, as to the exact site. He adopts those suggestions which I hazarded in 1876, 1879, and 1881, even when they do not agree with Mariette in several very important instances, and I am much pleased thus to be supported by so great an authority. I note, however, a few slips in his paper, and I think some of his new proposals will hardly meet with general acceptance. This is a small matter compared with the general accord as to the district indicated by the list.

"I am sorry my duties will not allow me to be present to-morrow night and hope this may reach you in time.

"Yours truly,
"C. R. CONDER."

Remarks on the Geographical Lists of Karnak;—I feel highly gratified at the notice taken of my paper on the Lists of Thothmes III. by so eminent an authority as M. Maspero, and by his adoption of some of my suggestions. The subject is, of course, one of great difficulty, as a mere list only indicates position on the assumption of consecutive order. M. Maspero does not seem to have seen my amended paper on the subject, published in the *Memoirs of the Survey of Western Palestine* (volume of Special Papers), which contains, I think, considerable improvements on my original paper, and, in some cases, agrees with his remarks. This was published in 1881.

I may now proceed to add a few remarks in detail as to ideas which have since occurred to me ; but, generally speaking, it appears that the area of the conquests of Thothmes III. has now been made very clear, whatever doubt may exist as to individual towns.

Kadesh may, of course, be the great objective of the campaign—the city on Orontes—since the additional list, lately studied by Mr. Tomkins, and given by Brugsch, includes the towns of Northern Syria. *Megiddo* may not be Mujeddâ, but there is no authority whatever, save a mere conjecture of Robinson's, for placing it at Lejjûn. *Dutina* I regard as certainly Dothan. If I remember rightly (not having the volume before me) I have so identified it in the "Memoirs ;" but, at any rate, the question is settled by M. Maspero. *Khaai* should appear as Haiyeh in Arabic. As to *Git Suna*, I do not feel certain. *Anshu*, I have thought, may be possibly the modern 'Anza, which is suitable for position, if the change of Shin to Zain be admitted.

As regards *Dibkhu*, *Bumai*, and *Kart Nizanu*, it ought not, I think, to be forgotten that Mohar, in his travels, mentions a river Nizana, which seems to be the Kasimiyeh, near Tyre; he also speaks of Tubakhi, which, as far as sound goes, may be the same as Dibkhu or Tibkhu, and which seems to be the Tibhath of the Bible (1 Chron. xviii. 8). These places are, of course, a good deal further north, but the suggestion for Nazana agrees with M. Maspero's location of *Lubina*. He will, however, I think, find that *Kûrah* is spelt with a guttural at the end, and has thus nothing to do with the Hebrew word, which in Arabic appears as Kariet.

As regards the next section, I have no doubt that the names Damascus, Abila, and Hamath or Hammath, are to be recognised, though I have previously supposed the latter to be Hammath on the Sea of Galilee. The absence of the guttural in *Adilu* or *Adiru* is, no doubt, important; but, then, the Egyptians had no real guttural, and the mistake is conceivable. I am inclined to see in *Birutu* rather the ruin Bîreh south of the Sea of Galilee, than the Berotha of Josephus, which I take to be the present Biria in Upper Galilee. This agrees with my supposition that No. 20 is, as Mariette suggests, Madon (*Madna*). I cannot see any possible connexion of Aitharûn with Berotha, nor is Aitharûn the only place with many wells. No. 20 is not identified by M. Maspero, but is, I think, very important. He accepts my view as to No. 21 being Sarôna, but this agrees much better with the above-noticed identification of Nos. 18, 19 than his own. *Tubi* at et Taiyibeh has already commended itself to me in connexion with the other proposals, of which M. Maspero has accepted one. No. 23 as Bessum I have already proposed in my "Handbook." No. 24 seems to me (see "Handbook to Bible," p. 243) to be possibly Amathus (*Amasna*), No. 26 Kenath (*Kana*), No. 28, as M. Maspero also says, Ashtaroth (*Tell Ashterah*), though this will not agree with his suggestion, Cana for No. 26. *Anurpha*, as Raphana, seems to me a valuable suggestion. As to No. 30, we do not know the exact position of Maked, or Maged, which I am inclined to place at *el Mejed*, further south. *Makata*, I would suggest, is more probably Maachath, as being next to Laish. In this case it is probably Abel Beth Maachah, the present Abl, which is intended.

M. Maspero, I understand, accepts No. 31 as Laish, and No. 32 as the celebrated Hazor of Galilee (Hadîreh). No. 34 brings us both back to Chinnereth on the Sea of Galilee. No. 36 he recognises, as I have already proposed, as ed Dâmieh, agreeing with No. 34. In this section, therefore, M. Maspero agrees with my amended list as published in 1879 ("Handbook to the Bible," p. 243) and 1881.

In No. 39 he is again inclined to adopt my suggestion of Misheal, and in No. 40 not only my suggestion Achshaph, but also my new site for that town at el Yasîf, which differs from any previously proposed.

No. 27 as 'Arrâneh cannot, of course, be accepted if Megiddo be at Lejjûn; but it becomes possible if it were at Mujeddá, and thus strengthens my case for that suggestion. Umm el Fahm does not appear to be an ancient name; it means "Mother of Charcoal," which is made in the vicinity. No. 33, Pa Hurah, I have sought in Upper Galilee at Horem

(Hârah), as being near Hazor and Laish. The suggestions for Nos. 42, 43, are, of course, indisputable, and have long been fixed points in the list.

As regards No. 41, I do not think it is at all possible that Geba of Horsemen can be Sheikh Ibreik. The idea rests on a mistaken reading of Josephus by Guerin. We have, however, Jebâta not far off, which does quite well for *Gebatuan*, as I have previously proposed. In my original MS. I find 'Arrâka identified as proposed by M. Maspero; but I have not got the papers by me to ascertain if I published this proposal. *'Aina* in this case seems clearly to be *'Anîn* near 'Arrâka. M. Maspero searches for it further north, because he makes No. 47 to be Accho. It might, however, be *'Ajjeh*, a large ancient village in the vicinity of 'Anîn and 'Arrâkah. If No. 48 be a Kadesh, why not Kadesh of Issachar, which was probably at Tell Abu Kadeis? No. 49 is *Caliimna*, or Galliimna, which seems to me rather to be Jellameh than the distant and doubtful Calamon.

In Nos. 53 and 54 M. Maspero adopts two identifications which I proposed I believe for the first time, in 1876, and which have always seemed to me specially important. In this case he has omitted to refer to my article, but the important point is that I now—ten years later—find myself supported by his valuable authority. No. 57 also agrees with my views, but, if I remember rightly, is due to Mariette. No. 58 I should propose to place at Shihon, on Jebel es Sih, or at the Áyûn Sháîn, East of Nazareth. No. 59 cannot very well be Tell en Naám, as that word contains a hard guttural not found in *Kanama*, which is more probably, I think, Rimmon of Zebulon, now Rummâneh. The town Osha mentioned for No. 58 by M. Maspero is now the ruin of Hûsheh.

It thus appears that as to the general district in which the names are to be sought, I am fully supported by M. Maspero, who agrees to my views in twenty cases, including several identifications, such as the two Ophels, Tubi Sarona Adami, &c. (not to speak of Misheal and Achshaph) of which I am specially confident, even in face of the authority of Mariette. While acknowledging several additions and improvements in M. Maspero's paper, I still think, with due deference, that in a few cases my suggestions hang together better than his own, in the identifications which he rejects.

C. R. CONDER.

Sir CHARLES WILSON, R.E., K.C.B., K.C.M.G., F.R.S.—I am afraid I cannot say much about the paper this evening, as I had no time to look over it before coming here. I think there can be no question as to the very great interest and value of the paper. It is, however, exceedingly technical, and will have to be studied carefully with the aid of a map. I know from personal experience that M. Maspero takes the greatest interest in Palestine exploration and the identification of the names in the lists of Thothmes, because he has spoken to me on the subject. I think that the great value of this paper is that it contains as accurate a translation as we shall probably ever have of these lists, by one of the first Egyptologists in the world, and their transcription into Hebrew characters by a scholar of M. Maspero's standing. With regard to his identification of Qodshu with Qodshu on the Orontes, I fully agree with him. I think that the campaign of Thothmes at that time was largely directed against the Hittites, the seat of whose power was at Qodshu, on the Orontes. I also agree with M. Maspero in placing Mâgidi (Megiddo) at Lejjun. Captain Conder says this is merely an opinion of Robinson's, but I do not agree with him on this point, for in the Bible Megiddo is closely connected with Taanach. There is another point with regard to Megiddo. Those who know the geography of Palestine are aware that from the great central range of hills from north to south a large spur runs out into the sea—the ridge of Carmel. The great object of the Egyptian armies was not to attack the Jews, whom they probably looked upon much as we regard the hill-tribes in India, but to get at their enemies, the Hittites in earlier days, and the Assyrians in later days, and their line of march would probably follow the best route for effecting that object. The ordinary route would be up the great plain of Philistia, and over the ridge of Carmel by the road leading to Lejjun. If we turn to a later period, and examine the campaign in which Josiah met his death, we shall see that it almost furnishes another proof that Megiddo lies in that direction. The Egyptian army was at that time on its way to attack the Assyrians. For causes of which we know nothing at the present day, Josiah determined to attack the Egyptians whilst they were on the march. With his small force of soldiers, he did not dare to attack the immense Egyptian army whilst it was in the plains of Philistia, but he marched through Judea and Samaria to this particular pass, which leads over Carmel to the plains of Megiddo, expecting to catch the Egyptians in the defile. So, in the narrative given by the inscriptions, the soldiers are said to have been afraid they would be attacked whilst passing through the defile leading to Megiddo. I also agree with M. Maspero in his identification of Bierota with the Berotha of Josephus, and I think that Berotha was probably situated at the foot of the hills, near the lake known as the Waters of Merom.

Mr. BOSCAWEN.—As Sir Charles Wilson has said, this paper is one the great importance of which does not come out until you study it carefully with your map, and especially with the topographical information we have in the Scriptures. It is very important to remember that these lists from the Temple of Karnak, which so accurately describe the geography of Palestine, are dated over 500 years before the time when the topographical chapters in the Book of Joshua were written. If they give us testimony as to the names of places corresponding to that contained in the Book of Joshua and to the Arabic names, it is a further remarkable proof of the wonderful conservatism which always characterises Eastern nations with regard to such names. I might say that, were it not for this wonderful system of preserving names which has existed through the whole East, the work of the Palestine Exploration Fund would have been three times as difficult as it has been. This paper, coming as it does after the recently-completed papers on and maps of Western Palestine, has a very much increased value in comparison with the statements published by M. Mariette. There are one or two identifications which are particularly interesting. That of Astaroth Karnaim is one which carries us back to a very early period of Jewish history, and is interesting in regard to the record of the worship of the two-horned Astoreth on the eastern side of Jordan. That worship, we know, was common throughout the East. One figure which struck me particularly amongst those I saw at Ierabis was that evidently of that Asiatic goddess with the crescent-horns upon her head. The description given of the battle of Megiddo, when applied to the site on which it was fought, appears to be extremely accurate, and furnishes another proof of the value of these records when studied in the East. The account was evidently written by a man who was either an eye-witness or who had the accounts of soldiers who took part in the fighting, and you have only to ask Assyrian scholars to read the inscriptions they have, such as that on the bronze gates of Ballawat, or the account of the battle of Karkar, which was probably fought in the narrow part of the Orontes valley, to see how accurately these scribes endeavoured to describe battles, and how their descriptions correspond with the ground itself. The value of this paper does not come out fully until you study it with the Bible and maps; but it is a very valuable one to this Society, especially as it comes from such a man as M. Maspero, who, being so very careful in his identifications not to rush to rash conclusions, and, being a scholar, knowing most of the languages with which he deals, gives to his work the imprimatur of one speaking with very great authority.

The CHAIRMAN.—I entirely agree that we are very much obliged to that great Egyptologist, M. Maspero, for his valuable paper, and must also add our thanks to Sir Charles Wilson for the contributions he has made to this subject to-night. These investigations have a practical bearing on Biblical scholarship. Recently, we, in the Bible Society, began to publish maps in our Bibles. When these maps go out to the islands of the sea, the people look at them and say, "But does Jerusalem exist at the present day? Is there such a place as Nazareth?" They have in their own lands traditional myths which refer to names and places, but nothing now exists which corresponds to those names and places. When they see our maps, they say, "Here are the names of certain places where certain events occurred"; and this gives a new and realistic value to the historical parts of the Bible. It is extremely interesting to find the old names that occur in the Bible, and some of which are identified as having the same names at the present day, in an Egyptian record dating back to the seventeenth century before Christ. What a marvellous confirmation of the Biblical narrative this is! Take the chief names here. There is no doubt whatever about them. For instance, we have Qodshu on the Orontes, and we have Megiddo. I do not think many will agree with Captain Conder that the true site of Megiddo is not known. I have recently been bringing out maps for the Bible Society, by the assistance of Sir Charles Wilson and Captain Conder, and I have felt constrained to hold to the old identification. The reasons we have for doing so are, I think, quite sufficient. It has been the battle-field of all ages. It was from such a place of fighting and slaughter that we got the name of the "battle of Megiddo." When the Romans came they pitched their tents there, and it has been a place of battle in all ages. Then there are such names as Damascus, and Hamath, and as Ashtoreth. I do not think sufficient importance is given to the last-mentioned place. I remember spending most of a Saturday and Sunday with Dr. Thompson at the old Edreï, and we took out different sets of people, and, pointing to certain ruins, asked what they were. The answer in each case was, "That is Ashtoreth." The ruins are standing there at the present time; that country will well repay the explorer. I think that some of M. Maspero's lesser identifications are open to question. I may point out in passing that he says he is not sure that the 𓎛 ח is ever rendered in Arabic by the ه. On this point M. Maspero need not feel any doubt. The weaker הַ arose of חַ. These letters, even in Hebrew, are frequently interchanged, as, for instance, חָלַךְ and הָלַךְ. Foreigners writing the word would, in all probability, soften the latter. See the Septuagint renderings, &c. Some of M. Maspero's minor identifications are merely tentative. Take Pahur, for instance. The word is connected with pottery, and at any place where pottery was made you would have that word. When the country was populous, a great deal of pottery was required, as people used it for carrying water, and for storing wheat and oil. Pottery was needed all over the country, and wherever there was a manufactory of pottery it would be called So-and-so Pahur. When the spoiler came, the place, which perhaps was very small, would be swept away. The identification here is that it may have been the ancient name of Safed. Well, it may or it may not; that is all. There are a number of minor names here which I have no doubt are happy guesses. I think they may be useful, and that each guess may be used as a working hypothesis. An hypothesis is always good as long as it remains an hypothesis. One of the great virtues of the theologian is faith, but I think a little scepticism should be a characteristic of the archæologist. I think we shall be safe in using a little scepticism in these matters. As to the large and important towns, there is no doubt about them now. I was told the other day that all the places which are mentioned in the Bible, and which are identified with certainty, could be counted on the fingers of one hand. Well, that is pure nonsense. It was the language of a man who had not studied the subject. We know the chief lines of traffic and the larger towns with a considerable amount of certainty. But where we have no certainty we do not gain anything by pressing our own guess or our own ideas.

The meeting was then adjourned.

NOTE FROM M. MASPERO.

M. Maspero writes:—

"Paris, 16 Août, 1886.

"Je vous remercie de m'avoir communiqué l'épreuve définitive de mon petit mémoire, et vous prie de présenter l'expression de ma sincère reconnaissance à toutes les personnes qui ont bien voulu y joindre leurs observations. Je n'ai rien à ajouter pour le moment : si plus tard quelque heureuse chance me permet de trouver pour les villes de Galilée quelque identification nouvelle, je m'empresserai de la communiquer au Victoria Institut.'

THE SPHINX.

The *Journal des Débats* has lately received from M. Maspero a letter describing what he will do with the 12,000 fr. subscribed in Paris to aid him in his excavations round the Sphinx of Ghizeh. He says:—"I am going now to work on two points, the right paw and the first steps of the stair. The stones of the right paw are covered with Greek votive inscriptions; those of the left paw bear none. This is at least an indication that the piety of the faithful was called more into play on the right, that is to say on the south, than on the left side. Perhaps there was a direct communication between the Sphinx and the granite temple which lies in that direction, and if so there is a chance of finding, on the way, a group of statues similar to that which Mariette discovered at the Serapeum. It may also be that some unknown chapel is concealed in the space which separates the Sphinx from the granite temple. In any case that is a question to be settled in a week or two. The problem connected with the first steps of the stair is, in my opinion, a very curious one. The Egyptian sculptors always represent the Sphinx of Ghizeh as placed on a cubic pedestal, ornamented with grooves and designs analogous to those observed on the different sarcophagi of the old Empire. Were they following an artistic caprice, or were they simply reproducing what they saw? In other words, is the Sphinx able to rest on a bed of rock, or has a gigantic pedestal been cut for it in the mountain from the top of which it looked down on the plain? On the latter hypothesis there would be a chance of finding on the east side, the door of a temple or tomb. It might prove to be the tomb of Menes. The pedestal may have disappeared in Roman times, and the Ptolemies may have constructed their monumental stair over the sand which covered it. As soon as I have found the first steps, it will be easy for me to see if the platform in front of the Sphinx is cut perpendicularly or if the rock advances in a gradual slope. This will be ascertained by a few plumbings judiciously made."—Ed.

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Warwickshire Natural History Society.
West Chester Philosophical Society, U.S.

OBJECTS, CONSTITUTION, AND BYE-LAWS

OF

The Victoria Institute,

OR

Philosophical Society of Great Britain.

Adopted at the First Annual General Meeting of the Members and Associates, May 27th, 1867, with Revisions of 1874-5.

§ I. *Objects.*

1. THE VICTORIA INSTITUTE, or PHILOSOPHICAL SOCIETY OF GREAT BRITAIN, is established for the purpose of promoting the following objects, viz.:—

First. To investigate fully and impartially the most important questions of Philosophy and Science, but more especially those that bear upon the great truths revealed in Holy Scripture; with the view of reconciling any apparent discrepancies between Christianity and Science.

Second. To associate together men of Science and authors who have already been engaged in such investigations, and all others who may be interested in them, in order to strengthen their efforts by association; and, by bringing together the results of such labours, after full discussion, in the printed transactions of an Institution: to give greater force and influence to proofs and arguments which might be little known, or even disregarded, if put forward merely by individuals.

Third. To consider the mutual bearings of the various scientific conclusions arrived at in the several distinct branches into which Science is now divided, in order to get rid of contradictions and conflicting hypotheses, and thus promote the real advancement of true Science; and to examine and discuss all supposed scientific results with reference to final causes, and the more comprehensive and fundamental principles of Philosophy proper, based upon faith in the existence of one Eternal God, who, in His wisdom, created all things very good.

Fourth. To publish Papers read before the Society in furtherance of the above objects, along with full reports of the discussions thereon, in the form of a Journal, or as the Transactions of the Institute.

Fifth. When subjects have been fully discussed, to make the results known by means of Lectures of a more popular kind, and to publish such Lectures.

Sixth. To publish English translations of important foreign works of real scientific and philosophical value, especially those bearing upon the relation between the Scriptures and Science; and to co-operate with other philosophical societies at home and abroad, which are now or may hereafter be formed, in the interest of Scriptural truth and of real science, and generally in furtherance of the objects of this Society.

Seventh. To found a Library and Reading Rooms for the use of the Members and Associates of the Institute, combining the principal advantages of a Literary Club.

§ II. *Constitution.*

1. The Society shall consist of Members and Associates, who in future shall be elected as hereinafter set forth.

2. The government of the Society shall be vested in a Council, to which members only shall be eligible, consisting of a President, two or more (not exceeding seven) Vice-presidents, a Treasurer, one or more Honorary Secretaries, and twelve or more (not exceeding twenty-four) Ordinary Members of Council, who shall be elected at the Annual General Meeting of the Members and Associates of the Institute. But, in the interval between two annual meetings, vacancies in the Council may be filled up by the Council from among the Members of the Society; and the Members chosen as Trustees of the funds of the Institute shall be *ex officio* Members of Council.

3. Any person desirous of becoming a Member or Associate shall make application for admission by subscribing the Form A of the Appendix, which must be signed by two Members of the Institute,

or by a Member of Council, recommending the candidate for admission as a Member; or by any one Member of the Institute, for admission as an Associate.

4. Upon such application being transmitted to one of the Secretaries, the candidate for admission may be elected by the Council, and enrolled as a Member or Associate of the Victoria Institute, in such manner as the Council may deem proper; having recourse to a ballot, if thought necessary, as regards the election of Members; in which case no person shall be considered as elected unless he have three-fourths of the votes in his favour.

5. Application for admission to join the Institute being thus made by subscribing Form A, as before prescribed, such application shall be considered as *ipso facto* pledging all who are thereupon admitted as Members or Associates to observe the Rules and Bye-Laws of the Society, and as indicative of their desire and intention to further its objects and interests; and it is also to be understood that only such as are professedly Christians are entitled to become *Members*.

6. Each Member shall pay an Entrance Fee of One Guinea and an Annual Contribution of Two Guineas. A Donation of Twenty Guineas shall constitute the donor a Life Member.

7. Each Associate shall pay an Annual Contribution of One Guinea. A donation of Ten Guineas shall constitute the donor a Life Associate.

8. The Annual Contributions shall be considered as due in advance on the 1st day of January in each year, and shall be paid within three months after that date; or, in the case of new admissions, within three months after election.

9. Any Member or Associate who contributes a donation in one sum of not less than Sixty Guineas to the funds of the Institute shall be enrolled as a Vice-Patron thereof, and will thus also become a Life Member or Life Associate, as the case may be.

10. Should any member of the Royal Family hereafter become the Patron, or a Vice-Patron, or Member of the Institute, the connexion shall be regarded as purely Honorary; and none of the Rules and Bye-Laws relating to donations, annual contributions, or obligations to serve in any office of the Society, shall be considered as applicable to such personages of Royal Blood.

11. Any Member or Associate may withdraw from the Society at any time, by signifying a desire to do so by letter, addressed to one of the Secretaries; but such shall be liable for the contribution of the current year, and shall continue liable for the annual contribu-

tion, until all sums due to the Society from such Member or Associate shall have been paid, and all books or other property borrowed from the Society shall have been returned or replaced.

12. Should there appear cause, in the opinion of the Council, for the exclusion from the Society of any Member or Associate, a private intimation may be made by direction of the Council, in order to give such Member or Associate an opportunity of withdrawing from the Society; but, if deemed necessary by the Council, a Special General Meeting of Members shall be called for the purpose of considering the propriety of expelling any such person: whereat, if eleven or more Members shall ballot, and a majority of those balloting shall vote that such person be expelled, he shall be expelled accordingly. One month's notice, at least, shall be given to the Members of any such Special General Meeting.

13. Non-resident Members and Associates, or others desirous of promoting the objects and interests of the Institute, may be elected by the Council to act as Corresponding Members abroad, or as Honorary Local Secretaries, if within the United Kingdom, under such arrangements as the Council may deem advisable.

14. The whole property and effects of the Society shall be vested in two or more Trustees, who shall be chosen at a General Meeting of the Society.

14*a*.* Special donations to the general fund, whether from Members, Associates, or others desirous of promoting the objects and interests of the Institute, shall be invested in the names of the Trustees.

14*b*. The Trustees are empowered to invest the Endowment Fund in other securities than Three per Cent. Annuities, such other securities being the Bonds of the Corporation of London, or Guaranteed Indian Railway Debentures, or Debenture Stocks.

14*c*. All moneys received on account of the Institute shall be duly paid to its credit at the Bankers, and all cheques shall be drawn, under authority of the Council, and shall be signed by the Honorary Treasurer and Honorary Secretary.

15. The accounts shall be audited annually, by a Committee, consisting of two Members,—one of whom may be on the Council,—to be elected at an Ordinary Meeting of the Society preceding the

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* This paragraph was added with a view to enabling the Institute to receive special donations towards an endowment fund, the word "general" being intended to signify that fund.

Anniversary Meeting. This Committee shall make a written Report to the Council at the first Meeting after such audit, and also to the Institute, upon the day of the Annual General Meeting,—stating the balance in the Treasurer's hands and the general state of the funds of the Institute.

16. Both Members and Associates shall have the right to be present to state their opinion, and to vote by show of hands at all General and Ordinary Meetings of the Society; but Members only shall be entitled to vote by ballot, when a ballot is taken in order to determine any question at a General Meeting.

§ III. *Bye-Laws* (Privileges).

1. A Member or Associate, when elected, shall be so informed by the Secretary in a printed copy of the letters, Form B, in the Appendix.

2. Members and Associates shall not be entitled to any privileges, or have the right to be present, or to vote at any of the Meetings of the Society, till they have paid the contributions due by them.

3. Annual subscriptions shall be considered as in arrear, if not paid on or before 31st March in each year, or within three months after election, as the case may be.

4. Should any annual subscription remain in arrear to the 30th June, or for six months after election, the Treasurer shall cause to be forwarded to the Member or Associate from whom the subscription is due, a letter, Form D, in the Appendix, unless such Member or Associate reside out of the United Kingdom; in which case the Form D shall not be sent unless the subscription continues unpaid till the 30th September.

5. If any arrears be not paid within twelve months, the Council shall use their discretion in erasing the name of the defaulter from the list of Members or Associates.

6. Members shall be entitled to introduce two Visitors at the Ordinary Meetings of the Society; and to have sent to them a copy of all the papers read before the Society, which may be printed in its Transactions* or otherwise, and of all other official documents which the Council may cause to be printed for the Society; they will also be entitled to a copy of all such translations of foreign works or other

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* And the Transactions issued in the years during which they have not subscribed may be purchased at half price.

books as are published under the auspices of the Society in furtherance of Object 6 (§ I).

7. Associates may introduce one visitor at the Ordinary Meetings, and shall be entitled to all the minor publications of the Society, and to a copy of its Transactions during the period of their being Associates, but not to the translations of foreign works or other books above referred to.* It shall, however, be competent to the Council of the Society, when its funds will admit of it, to issue the other publications of the Society to Associates, being ministers of religion, either gratuitously or at as small a charge as the Council may deem proper.

8. When it shall be found necessary to send the letter, Form D, to any Member or Associate who may be in arrear, the printed papers and other publications of the Society shall cease to be sent to such Member or Associate till the arrears are paid; and, until then, he shall not be allowed to attend any Meeting of the Society, nor have access to any public rooms which may be in its occupation.

9. The Library† shall be under the management and direction of the Council, who are empowered to designate such works as shall not be allowed to circulate.

10. Each Member‡ shall be allowed to borrow books from the Library, and to have not more than three volumes in his possession at the same time; pamphlets and periodical publications not to be kept above fourteen days, nor any other book above three weeks.

11. Members who may borrow books from the Library shall be answerable for the full value of any work that is lost or injured.

12. Periodical publications shall remain on the table for a month, other books for a fortnight, after they are received.

13. When a book or pamphlet is wanted, and has been the stipulated time in the possession of any Member, the Secretary shall request its return, and a fine of threepence a day shall be incurred for every day it may be detained, which fine shall commence on the third day after the transmission of the notice in the case of town Members, and after the sixth day in the case of country Members; and until the return of such works, and the discharge of all fines incurred, no further issue of books shall be permitted to the Member applied to.

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* These, as well as the Transactions issued in the years during which they have not subscribed, may be purchased at half price.

† For the use of the Members and Associates.—*See 7th Object.*

‡ Members only are allowed to take books away.

14. The books shall be ordered in for inspection at such times as the Council shall appoint, and a fine of half-a-crown shall be incurred for neglecting to send in books by the time required in the notice.

15. A Book shall lie on the Library table in which Members may insert, for the consideration of the Council, the titles of such works as they desire to be purchased for the Institute.

§ IV. *Bye-Laws* (General, Ordinary, and Intermediate Meetings).

1. A General Meeting of Members and Associates shall be held annually on May 24th (being Her Majesty's birthday, and the Society's anniversary), or on the Monday following, or on such other day as the Council may determine as most convenient, to receive the Report of the Council on the state of the Society, and to deliberate thereon; and to discuss and determine such matters as may be brought forward relative to the affairs of the Society; also, to elect the Council and Officers for the ensuing year.

2. The Council shall call a Special General Meeting of the Members and Associates, when it seems to them necessary, or when required to do so by requisition, signed by not less than ten Members and Associates, specifying the question intended to be submitted to such Meeting. Two weeks' notice must be given of any such Special General Meeting; and only the subjects of which notice has been given shall be discussed thereat.

3. The Ordinary Meetings of the Society shall usually be held on the first and the Intermediate Meetings on the third Monday evenings in each month, from November to June inclusive, or on such other evenings as the Council may determine to be convenient: and a printed card of the meetings for each Session shall be forwarded to each Member and Associate.

4. At the Ordinary and Intermediate Meetings the order of proceeding shall be as follows:—The President, or one of the Vice-Presidents, or a Member of the Council, shall take the chair at 8 o'clock precisely, the minutes of the last Ordinary or Intermediate Meeting shall be read aloud by one of the Secretaries, and, if found correct, shall be signed by the Chairman; the names of new Members and Associates shall be read; the presents made to the Society since their last Meeting shall be announced; and any other communications which the Council think desirable shall be made to the Meeting. After which, the Paper or Papers intended for the evening's discussion shall be announced and read, and the persons

present shall be invited by the Chairman to make any observations thereon which they may wish to offer.

> The claims of Members and Associates to take part in a discussion are prior to those of Visitors. The latter, when desiring to speak upon any Paper, must first send their cards to the Chairman and ask permission (unless they have been specially invited by the Council "to attend, and join in considering the subject before the Meeting," or are called upon by the Chairman). 1875.

5. The Papers read before the Society, and the discussions thereon, fully reported, shall be printed by order of the Council; or, if not, the Council shall, if they see fit, state the grounds upon which this Rule has been departed from, in the printed Journal or Transactions of the Society.

6. The Council may at their discretion authorise Papers of a general kind to be read at any of the Ordinary or Intermediate Meetings, either as introductory lectures upon subjects proper to be afterwards discussed, or as the results of discussions which have taken place, in furtherance of the 5th Object of the Society (§ I.).

7. With respect to Intermediate Meetings, the Papers read at which are not necessarily printed nor the discussions reported,* the Council, at its discretion, may request any lecturer or author of a paper to be read thereat, previously to submit an outline of the proposed method of treating his subject.

8. At the Ordinary or Intermediate Meetings no question relating to the Rules or General Management of the affairs of the Society shall be introduced, discussed, or determined.

§ V. *Bye-Laws* (Council Meetings).

1. The Council shall meet at least once every month from November to June inclusive, or at any other time and on such days as they may deem expedient. The President, or any three Members of the Council, may at any time call a special Meeting, to which the whole Council shall be summoned.

2. At Council Meetings three shall be a quorum; the decision of the majority shall be considered as the decision of the Meeting, and the Chairman shall have a casting vote.

3. Minutes of the proceedings shall be taken by one of the Secretaries, or, in case of his absence, by some other Member present,

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* So arranged when the "Intermediate Meetings" were commenced, 16th January, 1871.

whom the Chairman may appoint; which Minutes shall afterwards be entered in a minute-book kept for that purpose, and read at the next Meeting of the Council, when, if found correct, they shall be signed by the Chairman.

§ VI. *Bye-Laws* (Papers).

1. Papers presented to be read before the Society shall, when read, be considered as the property of the Society, unless there shall have been any previous engagement with its author to the contrary; and the Council may cause the same to be published in any way and at any time they may think proper after having been read. If a Paper be not read, it shall be returned to the author; and, if a Paper be not published within a reasonable time after having been read, the author shall be entitled himself to publish it, and he may borrow it for that purpose.

2. When a Paper is sent to the Society for the purpose of being read, it shall be laid before the Council, who shall refer it to two of that body, or of the other Members or Associates of the Society whom they may select, for their opinions as to the character of the Paper and its fitness or otherwise for being read before the Society, which they shall state as briefly as may be, in writing, along with the grounds of their respective opinions. Should one of such opinions be adverse to the Paper and against its being read before the Society, then it shall be referred to some other referee, who is unaware of the opinion already pronounced upon the Paper, in order that he may state his opinion upon it in like manner. Should this opinion be adverse to the Paper, the Council shall then consult and decide whether the Paper shall be rejected or read; and, if rejected, the Paper shall be returned to the author with an intimation of the purport of the adverse opinions which have been given with respect to it; but the names of the referees are not to be communicated to him, unless with their consent or by order of the Council. All such references and communications are to be regarded as confidential, except in so far as the Council may please to direct otherwise.

3. The Council may authorise Papers to be read without such previous reference for an opinion thereon; and when a Paper has been referred, and the opinion is in favour of its being read in whole or in part, the Council shall then cause it to be placed in the List of Papers to be so read accordingly, and the author shall receive due notice of the evening fixed for its reading.

4. The authors of Papers read before the Society shall, if they desire it, be presented with twenty-five separate copies of their Paper, with the discussion thereon, or with such other number as may be determined upon by the Council.

§ VII. *Bye-Laws* (General).

1. The government of the Society, and the management of its concerns are entrusted to the Council, subject to no other restrictions than are herein imposed, and to no other interference than may arise from the acts of Members in General Meeting assembled.

2. With respect to the duties of the President, Vice-Presidents, and other Officers and Members of Council, and any other matters not herein specially provided for, the Council may make such regulations and arrangements as they deem proper, and as shall appear to them most conducive to the good government and management of the Society, and the promotion of its objects. And the Council may hire apartments, and appoint persons not being Members of the Council, nor Members or Associates of the Institute, to be salaried officers, clerks, or servants, for carrying on the necessary business of the Society; and may allow them respectively such salaries, gratuities, and privileges, as to them, the Council, may seem proper; and they may suspend any such officer, clerk, or servant from his office and duties, whenever there shall seem to them occasion; provided always, that every such appointment or suspension shall be reported by the Council to the next ensuing General Meeting of the Members, to be then confirmed or otherwise as such Meeting may think fit.

FORM A.

Form of Application *for the Admission of Vice-Patrons, Members, or Associates of the* **Victoria Institute.**

[*Date*]____________________188 .

*I hereby desire to be enrolled a** __________________ *of the* VICTORIA INSTITUTE, OR PHILOSOPHICAL SOCIETY OF GREAT BRITAIN.

* *Here insert* Vice-Patron, *or* Member, *or* Life Member, *or* Associate, *or* Life Associate.	*Candidate's ordinary Signature, and full name, if necessary.*	____________________ ____________________
	Title, Profession, University degree &c., or other distinction.	____________________ ____________________
	*Address*____________________	
	If an Author, the name of the Candidate's works may be here stated.	____________________ ____________________

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To be signed by Two Members or a Member of Council.

To the Honorary Officers of the VICTORIA INSTITUTE,
7, Adelphi Terrace, Strand, London, W.C.

FORM B.

SIR, 18 .

I have the pleasure to inform you, with reference to your application dated the , that you have duly been elected a of the VICTORIA INSTITUTE, OR PHILOSOPHICAL SOCIETY OF GREAT BRITAIN.

I have the honour to be, Sir,
Your faithful Servant,

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To ____________________ *Hon. Sec.*

FORM C.

(*Bankers*) Messrs. ____________________

* Please pay Messrs. RANSOM, BOUVERIE, & Co. my Annual Contribution of Two GUINEAS to the VICTORIA INSTITUTE, due on the 1st of January, 188 , and the same amount on that day in every succeeding year, until further notice.

I am,
Your obedient Servant,

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____________________188 .

If this Form be used, please add your Signature, Banker's Name, and the Date, and return it to the Office, 7, Adelphi Terrace. Receipt-stamp required.

* The above is the form for Members. The form for Associates is the same except that the Subscription stands as "ONE GUINEA."

FORM D.

SIR, 18 .

I am directed by the Council of the VICTORIA INSTITUTE to remind you that the Annual Contribution due by you to the Society for the year is now six months in arrear; and I have to call attention to the Bye-Laws of the Institute, § III., ¶ 4 and 8, and to request you to remit to me the amount due (viz. £) by Post-office order or otherwise, at your earliest convenience.

I have the honour to be, Sir,
Your faithful Servant,

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To ____________________ *Treasurer.*

FORM E.

FORM OF BEQUEST.

I give and bequeath to the Trustees or Trustee for the time being of The Victoria Institute, or Philosophical Society of Great Britain, to be applied by them or him for the purposes of the said Society, the sum of £ , such sum to be wholly paid out of such part of my personal estate as may be lawfully applied to the purposes of charity, and in priority to all other legacies. And I declare that the receipt of the Trustees or Trustee for the time being of the said Society shall be a good discharge to my Executors for the said legacy.

THE JOURNAL OF THE TRANSACTIONS.

Since the Inauguration of the Society, the following Papers have been read :—The Quarterly Parts of the Journal are indicated by the numbers prefixed. (*The volumes are sold at One Guinea to Non-Members; Half-a-Guinea to Members and Associates; those issued during the years of subscription are not charged for.*)

FIRST SERIES, VOLS. 1 TO 5.

VOL. I.

1. A Sketch of the Existing Relations between Scripture and Science. By the late George Warington, Esq., F.C.S.
2. On the Difference in Scope between Scripture and Science. By the late C. Mountford Burnett, Esq., M.D., Vice-President V.I.
   On Comparative Philology. By the Rev. Robinson Thornton, D.D., Vice-President V.I.
   On the Various Theories of Man's Past and Present Condition. By the late James Reddie, Esq., Hon. Sec. V.I.
3. On the Language of Gesticulation and Origin of Speech. By Professor J. R. Young.
   On Miracles: their Compatibility with Philosophical Principles. By the Rev. W. W. English, M.A.
   Thoughts on Miracles. By the late E. B. Penny, Esq.
   On the General Character of Geological Formations. By the late E. Hopkins, Esq., C.E.
4. On the Past and Present Relations of Geological Science to the Sacred Scriptures. By the Rev. Professor John Kirk.
   On the Lessons taught us by Geology in relation to God. Rev. J. Brodie, M.A.
   On the Mutual Helpfulness of Theology and Natural Science. By Dr. Gladstone, F.R.S.
   On Falling Stars and Meteorites. By the late Rev. W. Mitchell, M.A., Vice-President V.I.

(*The above Papers, with the Discussions thereon, and with "Scientia Scientiarum: being some Account of the Origin and Objects of the Victoria Institute," with the Reports of the Provisional Proceedings, and the Inaugural Address by the late Rev. Walter Mitchell, M.A., Vice-President, form Volume I. of the "Journal."*)

VOL. II.

5. On the Terrestrial Changes and Probable Ages of the Continents, founded upon Astronomical Data and Geological Facts. By the late EVAN HOPKINS, Esq., C.E., F.G.S.
On the Credibility of Darwinism. By the late GEORGE WARINGTON, Esq., F.C.S.
On the Credibility of Darwinism. By the late JAMES REDDIE, Esq., Hon. Sec. V.I.
6. On Utilitarianism. By the late JAMES REDDIE, Esq., Hon. Sec. V.I.
On the Logic of Scepticism. By the Rev. ROBINSON THORNTON, D.D., V.P.
Annual Address (On the Institute's Work). By the late JAMES REDDIE, Esq., Hon. Sec. V.I.
7. On the Relations of Metaphysical and Physical Science to the Christian Doctrine of Prayer. By the Rev. Professor JOHN KIRK.
On Geological Chronology, and the Cogency of the Arguments by which some Scientific Doctrines are supported. (In reply to Professor Huxley's Address delivered at Sion College on 21st Nov., 1867.) By the late J. REDDIE, Esq., Hon. Sec. V.I. (1867–68).
8. On the Geometrical Isomorphism of Crystals, and the Derivation of all other Forms from those of the Cubical System. (6 *Plates.*) By the late Rev. W. MITCHELL, M.A., V.P.

VOL. III.

9. On the Antiquity of Civilisation. By the late Bishop TITCOMB, D.D.
On Life, with some Observations on its Origin. By J. H. WHEATLEY, Esq., Ph.D.
On the Unphilosophical Character of some Objections to the Divine Inspiration of Scripture. By the late Rev. WALTER MITCHELL, M.A.
On Comparative Psychology. By E. J. MORSHEAD, Esq., Hon. For. Sec. V.I.
10. On Theology as a Science. By the late Rev. A. DE LA MARE, M.A.
On the Immediate Derivation of Science from the Great First Cause. By R. LAMING, Esq.
On some of the Philosophical Principles contained in Mr. Buckle's "History of Civilisation," in reference to the Laws of the Moral and Religious Developments of Man. By the Rev. Prebendary C. A. ROW, M.A.
On the Nature of Human Language, the Necessities of Scientific Phraseology, and the Application of the Principles of both to the Interpretation of Holy Scripture. By the Rev. J. BAYLEE, D.D.
11. On the Common Origin of the American Races with those of the Old World. By the late Bishop TITCOMB, D.D.
On the Simplification of First Principles in Physical Science. By the late C. BROOKE, F.R.S.
On the Biblical Cosmogony scientifically considered. By late G. WARINGTON, Esq., F.C.S.
On Ethical Philosophy. By the Rev. W. W. ENGLISH, M.A.
12. On some Uses of Sacred Primeval History. By the late D. MCCAUSLAND, Esq., Q.C., LL.D.
On the Relation of Reason to Philosophy, Theology, and Revelation. By the Rev. Preb. C. A. ROW, M.A.

VOL. IV.

13. Analysis of Human Responsibility. By the late Prebendary IRONS, D.D. (And part 16.)
On the Doctrine of Creation according to Darwin, Agassiz, and Moses. By Prof. KIRK.
14. On the Noachian Deluge. By the Rev. M. DAVISON.
On Life—Its Origin. By J. H. WHEATLEY, Esq., Ph.D.
On Man's Place in Creation. By the late Professor MACDONALD, M.D.
15. On More than One Universal Deluge recorded in Scripture. By late Rev. H. MOULE, M.A.
On Certain Analogies between the Methods of Deity in Nature and Revelation. By the Rev. G. HENSLOW, M.A., F.L.S.
On the Respective Provinces of the Observer and the Reasoner in Scientific Investigation. By the Rev. EDWARD GARBETT, M.A.
On the Credulity of Scepticism. By the Rev. R. THORNTON, D.D., V.P.
16. On Current Physical Astronomy. By the late J. REDDIE, Esq., Hon. Sec. V.I.
Analysis of Human Responsibility. By late Preb. IRONS, D.D. (See part 13.) *Concluded.*

VOL. V.

17. On the Origin of the Negro. By the late Bishop TITCOMB, D.D.
On the Testimony of Philosophy to Christianity as a Moral and Spiritual Revelation. By the Rev. Preb. C. A. ROW, M.A.
On the Numerical System of the Old Testament. By the Rev. Dr. THORNTON, V.P.
18. On Spontaneous Generation; or, the Problem of Life. By the Rev. Prof. KIRK.
A Demonstration of the Existence of God. By the Rev. J. M'CANN, D.D.
Why Man must Believe in God. By the late JAMES REDDIE, Esq., Hon. Sec. V.I.
19. On Geological Proofs of Divine Action. By S. R. PATTISON, Esq., F.G.S.
On True Anthropology. By W. HITCHMAN, Esq., M.D.
On Comparative Psychology. (Second Paper.) By E. J. MORSHEAD, Esq. Hon., For. Sec. V.I.
20. On the High Numbers in the Pentateuch. By P. H. GOSSE, Esq., F.R.S., V.P.
Israel in Egypt. By the late Rev. H. MOULE, M.A.

NEW SERIES.

BEING THE VOLUMES CONTAINING THE MORE MODERN PAPERS.

VOL. VI. IS THE FIRST OF THIS SERIES.

21. On Civilisation, Moral and Material. (Also in Reply to Sir John Lubbock on "Primitive Man.") By the late J. **REDDIE**, Esq., Hon. Sec. V.I.
On Dr. Newman's "Essay in Aid of a Grammar of Assent." By the Rev. Preb. **ROW**, M.A.
22. On the Evidence of the Egyptian Monuments to the Sojourn of Israel in Egypt. By the Rev. B. W. **SAVILE**, M.A.
On the Moabite Stone, by Captain F. **PETRIE**, Hon. Sec.
On Phyllotaxis; or, the Arrangement of Leaves in Accordance with Mathematical Laws. By the Rev. G. **HENSLOW**, M.A., F.L.S.
On Prehistoric Monotheism, considered in relation to Man as an Aboriginal Savage. By the late Bishop **TITCOMB**, D.D.
23. On Biblical Pneumatology and Psychology. By the Rev. W. W. **ENGLISH**, M.A.
On Some Scriptural Aspects of Man's Tripartite Nature. By the Rev. C. **GRAHAM**.
On Ethnic Testimonies to the Pentateuch. By the late Bishop **TITCOMB**, D.D.
24. On the Darwinian Theory. By the late Prebendary **IRONS**, D.D.
Serpent Myths of Ancient Egypt. By the late W. R. **COOPER**, Esq., F.R.A.S., M.R.A.S., Sec. Soc. Biblical Archæology, 129 Illustrations.

VOL. VII.

25. On Natural Theology, considered with respect to Modern Philosophy. By the Rev. G. **HENSLOW**, M.A., F.L.S.
On Fatalism. Contributed by the Rev. J. **ROBBINS**, D.D.
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